DECEMBER 5, 1936

Railway Age

Founded in 1856

McCARTNEY LIBRARY
GENEVA COLLEGE

WROUGHT IRON

preferred for

Bridge Protection!

● Wrought iron's record in bridge service is impressive. When compared with other commonly used material, the evidence is convincing, and that's why wrought iron is preferred by many leading bridge engineers.

Wrought iron stands up under all forms of corrosion to which a bridge is subjected—locomotive blasts, brine drippings from refrigerator cars, track drainage, and corrosion in places not easy to maintain, such as bearing and masonry plates.

In contrast to this record is the premature failure of the other materials that can't withstand corrosion or vibration and wide temperature ranges without crystallizing or cracking.

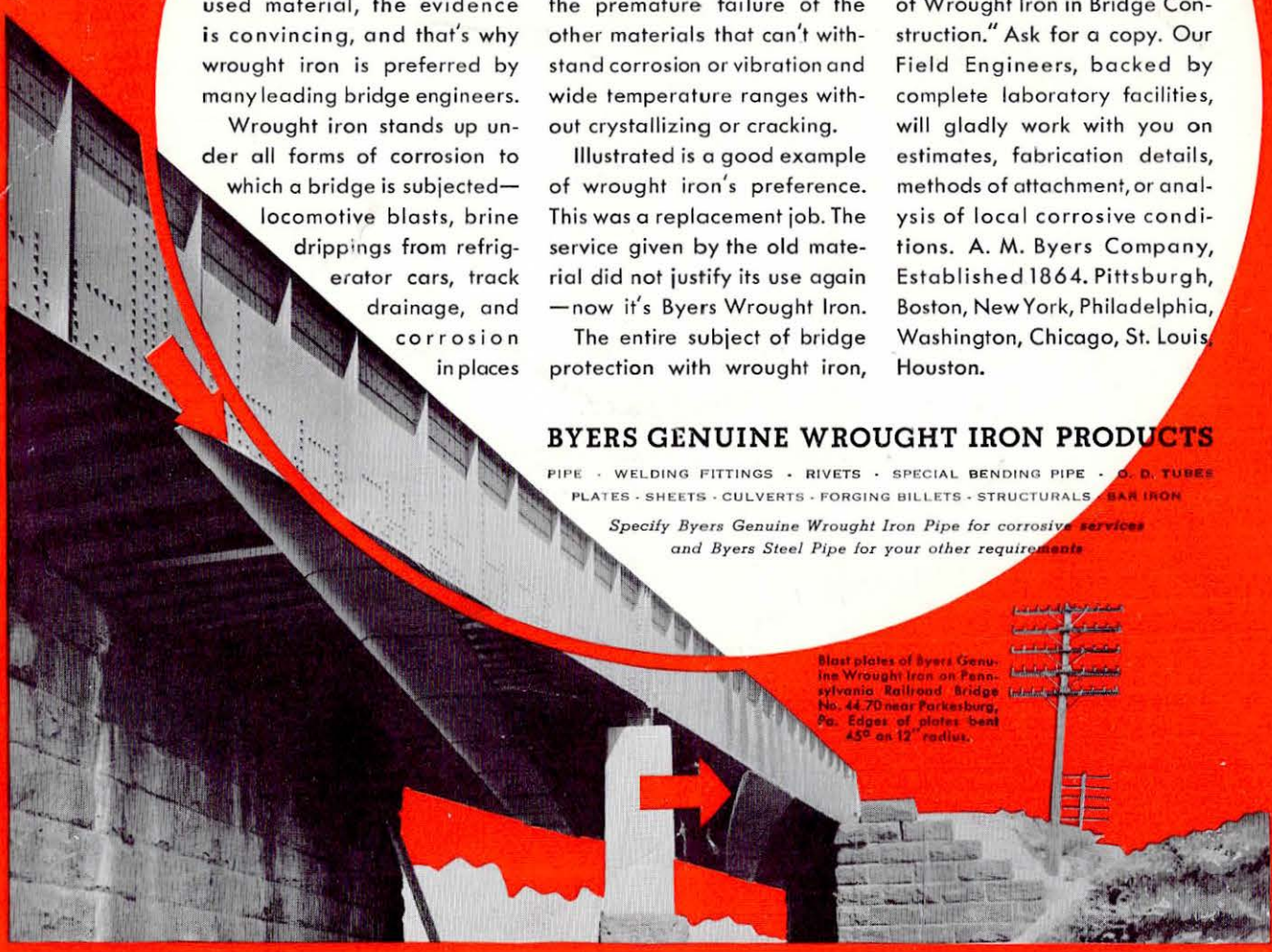
Illustrated is a good example of wrought iron's preference. This was a replacement job. The service given by the old material did not justify its use again—now it's Byers Wrought Iron.

The entire subject of bridge protection with wrought iron, including railings and pier protection, is discussed in the illustrated special report "The Use of Wrought Iron in Bridge Construction." Ask for a copy. Our Field Engineers, backed by complete laboratory facilities, will gladly work with you on estimates, fabrication details, methods of attachment, or analysis of local corrosive conditions. A. M. Byers Company, Established 1864. Pittsburgh, Boston, New York, Philadelphia, Washington, Chicago, St. Louis, Houston.

BYERS GENUINE WROUGHT IRON PRODUCTS

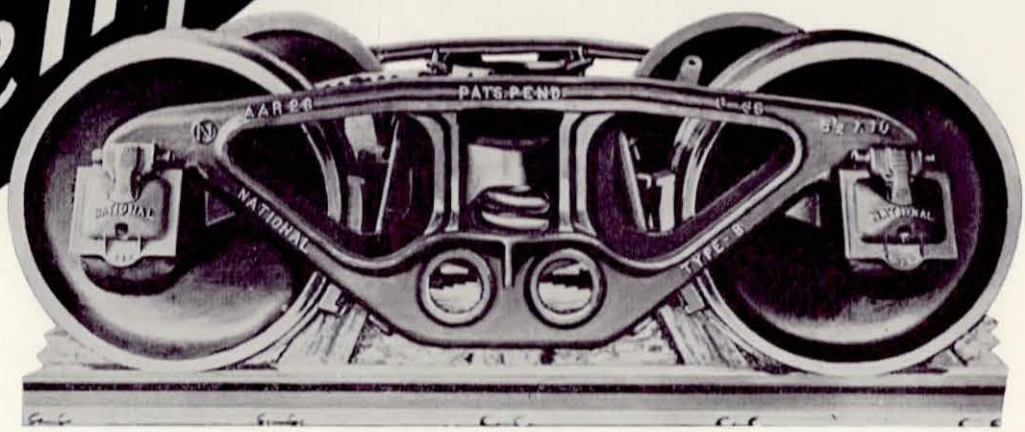
PIPE · WELDING FITTINGS · RIVETS · SPECIAL BENDING PIPE · O. D. TUBES
PLATES · SHEETS · CULVERTS · FORGING BILLETS · STRUCTURALS · BAR IRON

Specify Byers Genuine Wrought Iron Pipe for corrosive services and Byers Steel Pipe for your other requirements



Blast plates of Byers Genuine Wrought Iron on Pennsylvania Railroad Bridge No. 44.70 near Parkesburg, Pa. Edges of plates bent 45° on 12" radius.

Consider these 11 points



OUTSTANDING FEATURES OF THE NATIONAL TYPE B SPRING-PLANKLESS TRUCKS

1—Quick Wheel Changes can be made.

2—Spring-plank elimination made possible by compensating changes in design.

3—Flexible vertically—no spring-plank to twist.

4—Enclosed springs, no shifted or lost springs.

5—Longitudinal Leaf Springs do not reduce side clearance.

6—Increased Spring Capacity.

7—Oversolid Spring Protection.

8—Longer Spring Life.

9—Spring cushioned lateral motion.

10—Brake Beam Safety Ledges cast integral with Side Frames.

11—Journal Box Ledge, keeps water out of journal boxes, reduces hot boxes.

Every one of these items, singly and combined, make the NATIONAL Type B Spring-Plankless Trucks the ideal trucks for your freight cars.

NATIONAL MALLEABLE AND STEEL CASTINGS CO.

General Offices: CLEVELAND, OHIO

Sales Offices: New York, Philadelphia, Chicago, St. Louis, San Francisco

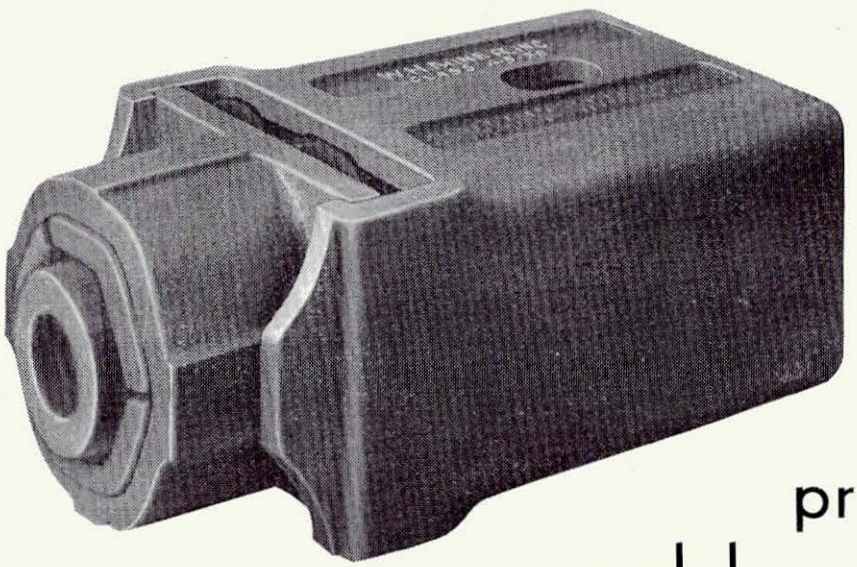
Works: Cleveland, Chicago, Indianapolis, Sharon, Pa., Melrose Park, Ill.

Canadian Representatives: Railway and Power Engineering Corporation, Ltd., Toronto and Montreal

Published weekly by Simmons-Boardman Publishing Corporation, 1309 Noble Street, Philadelphia, Pa. Entered as second class matter, January 4, 1933, at the Post Office at Philadelphia, Pa., under the Act of March 3, 1879.

MINER

VELVET ACTION



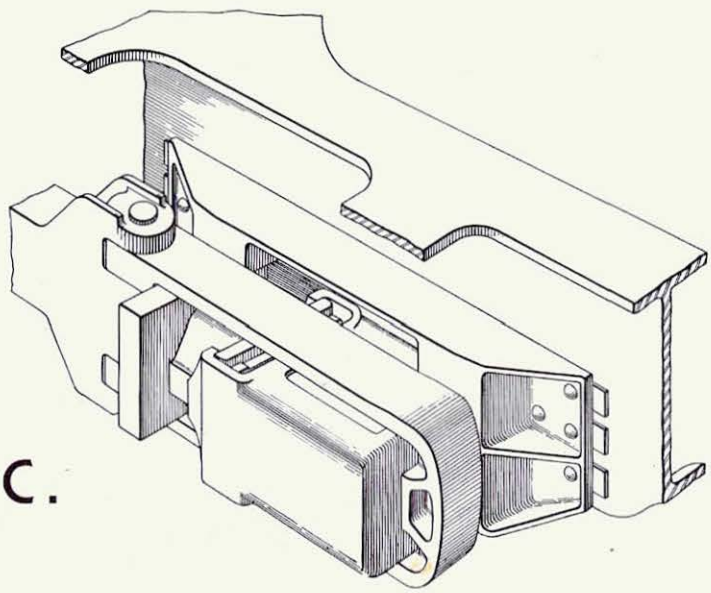
PASSENGER TRAIN DRAFT GEARS

promote comfort and luxury in rail travel

Sleeping cars equipped with Miner Gears start smoothly and move noiselessly out of terminals.

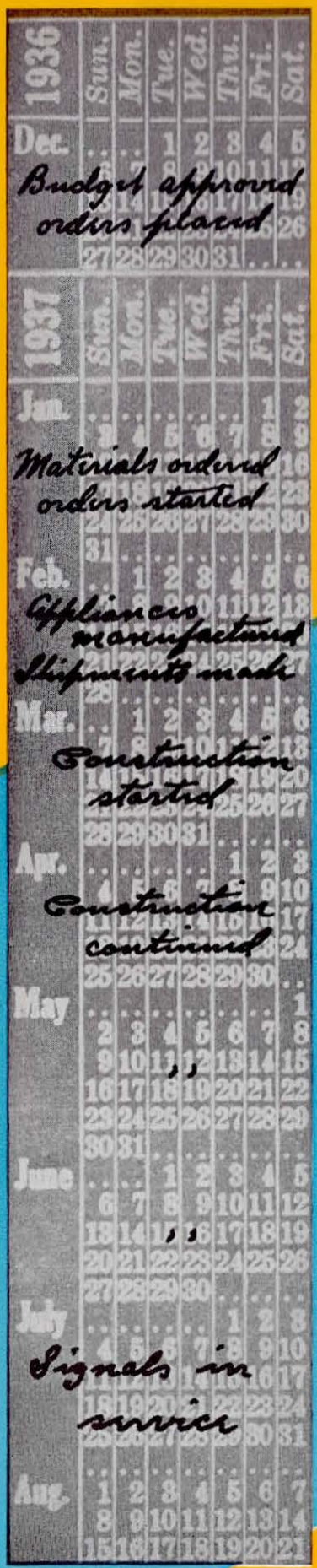
Coupling impacts in stations and yards are softly cushioned and rest is undisturbed.

No backing and jerking necessary to get under way.



Specialists in
Shock Prevention
Since 1894

W. H. MINER, INC.
CHICAGO



EARLY

GIVES GREATER VALUE

AN OPEN LETTER TO RAILROAD OFFICERS

Gentlemen:

We respectfully urge those interested in installing SIGNALING and INTERLOCKING systems in territories affected by severe winter weather, where snows are heavy and frost is deep, to give approval to their budgets now or prior to January 1st so that orders can be placed before January 1st for the fabrication and manufacture of the apparatus during the winter months.

Signal systems and apparatus are greatly varied to suit different railway standards and their local requirements, and it is not practical to carry appliances in stock to any extent (beyond certain known margins largely for maintenance purposes.)

Most signaling projects such as centralized traffic control installations, automatic block signaling systems, interlocking systems, and consolidations require careful engineering.

The manufacturing of apparatus for these systems involves detail engineering, placing of orders for a wide variety of raw materials such as steel, copper, alloys, insulating compounds, and various compositions which are special to the art of signaling. It also includes the fabrication of such materials, the processes of which in most cases require extreme accuracy. After the parts have been assembled into signal apparatus, there is involved adjusting, testing and inspection. Such technical manufacturing can be done advantageously during the winter months so that deliveries can be made sufficiently early to start field construction work in the spring and early summer. This program will effect savings to you running as high as 100% or more in the cost of installation labor.

In your interest as purchaser, and ours as producer, we strongly urge your serious consideration of this method of procedure.

Respectfully submitted,

GENERAL RAILWAY SIGNAL COMPANY

PROGRAM

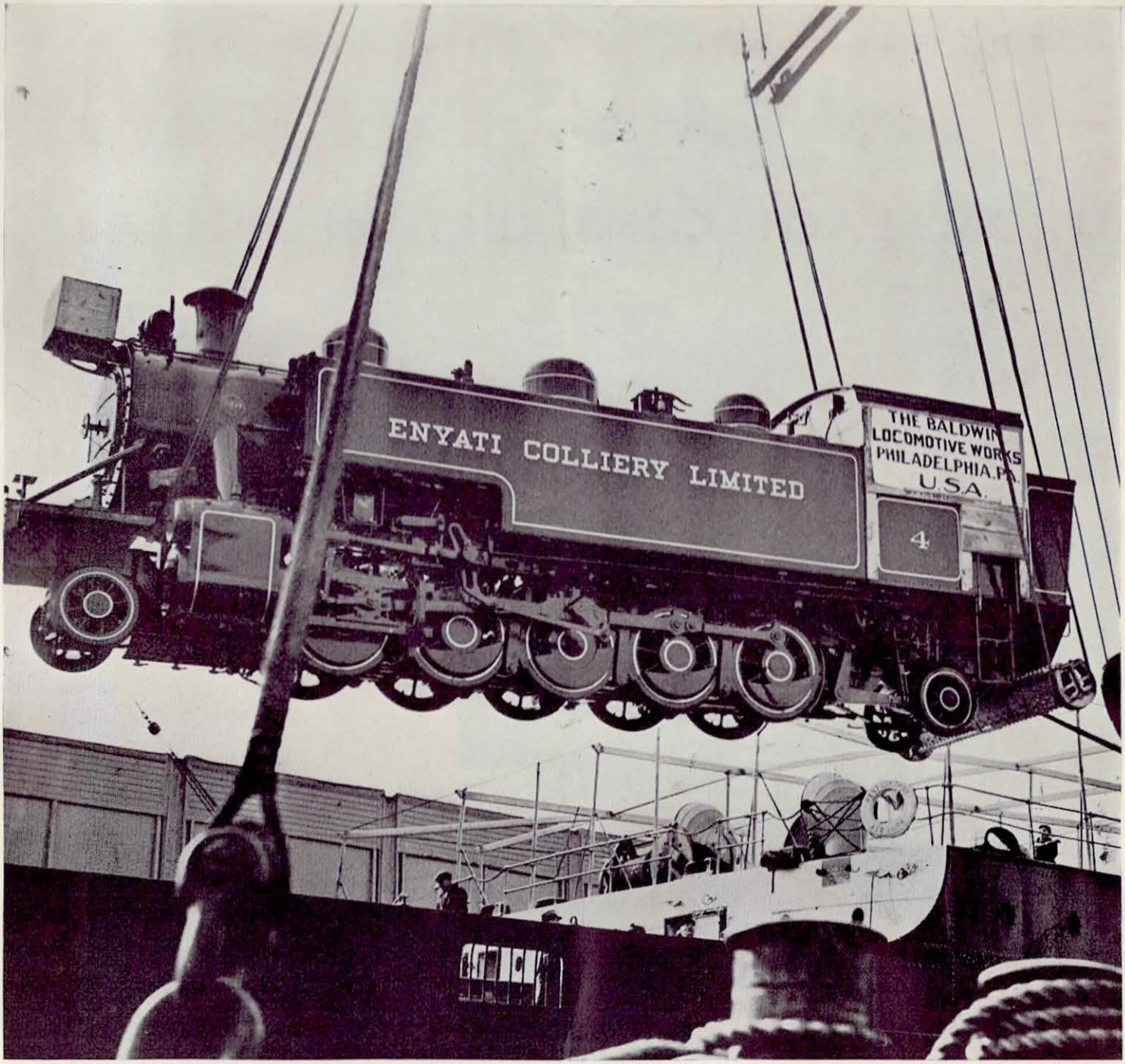
FROM EACH CONSTRUCTION DOLLAR

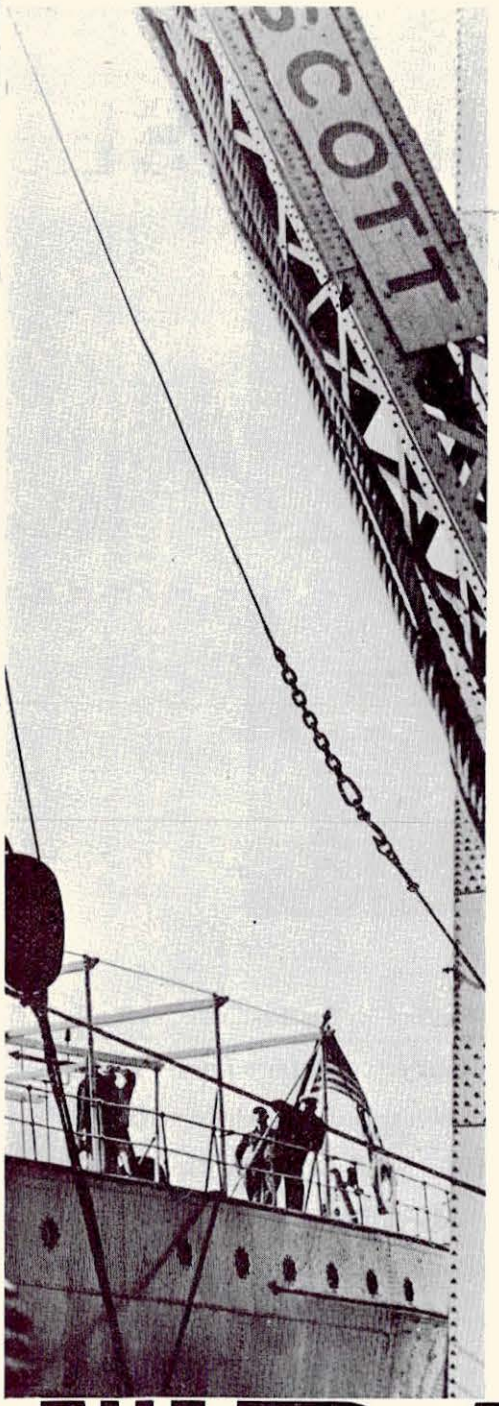
THIS . . . 20° below zero.

or . . . THIS? Spring and summer weather.

GENERAL RAILWAY SIGNAL COMPANY

New York Chicago ROCHESTER, N. Y. St Louis A-1358


ENYATI COLLIERY LIMITED
THE BALDWIN
LOCOMOTIVE WORKS
PHILADELPHIA, PA.
U.S.A.
4



"Down to the Sea in Ships"—

Goes a Baldwin 2-10-2 type locomotive destined for the Enyati Colliery, Ltd., in South Africa; the first locomotive to be exported from the United States to Africa since 1930.

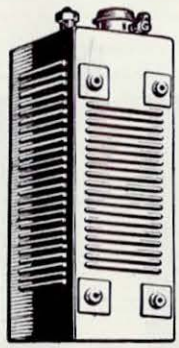
In all classes of service—at home or abroad—the modern steam locomotive, replacing obsolete power, will show savings in operation and maintenance which will quickly amortize the investment and provide increased earnings.

THE BALDWIN LOCOMOTIVE WORKS

Philadelphia, Pa.

SHE HAS YOUR PROMISE

NOW, windows are locked. You promise a "through air-conditioned ride". A promise which must be kept—run after run, week in, week out... for years. More than any other transportation system, American railroads are known for keeping promises. Can you risk this priceless reputation? You're putting it in the hands of the battery in every air-conditioned car. The combined requirements of car-lighting and air-conditioning make dependability in the battery now doubly important.



To meet extraordinary demands, the battery must be extraordinary... one free from "fainting spells". Your electrical engineer will tell you that the Edison Steel-Alkaline Battery is least liable to balk because its construction is steel and its principle is more fool-proof. The active materials of Edisons are locked in steel... they cannot escape. This and the exclusive Steel-Alkaline principle give Edisons 2 to 5 times longer life... a life which is admitted by the trade to be the most trouble-free.

EDISON STORAGE BATTERY

DIVISION OF THOMAS A. EDISON, INC., WEST ORANGE, NEW JERSEY

Safety—

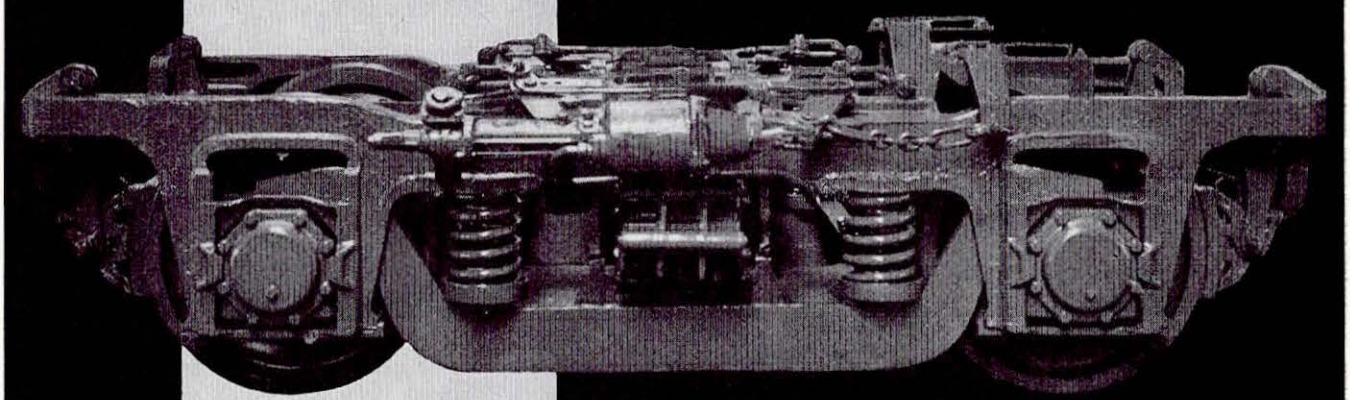
comfort and performance demanded in high speed transportation.

Speed-fast schedules; modern passenger transportation demands it.

Speeds in excess of 100 miles per hour mean about 150 feet per second. With these speeds passengers want comfort, safety and the assurance of positive control.

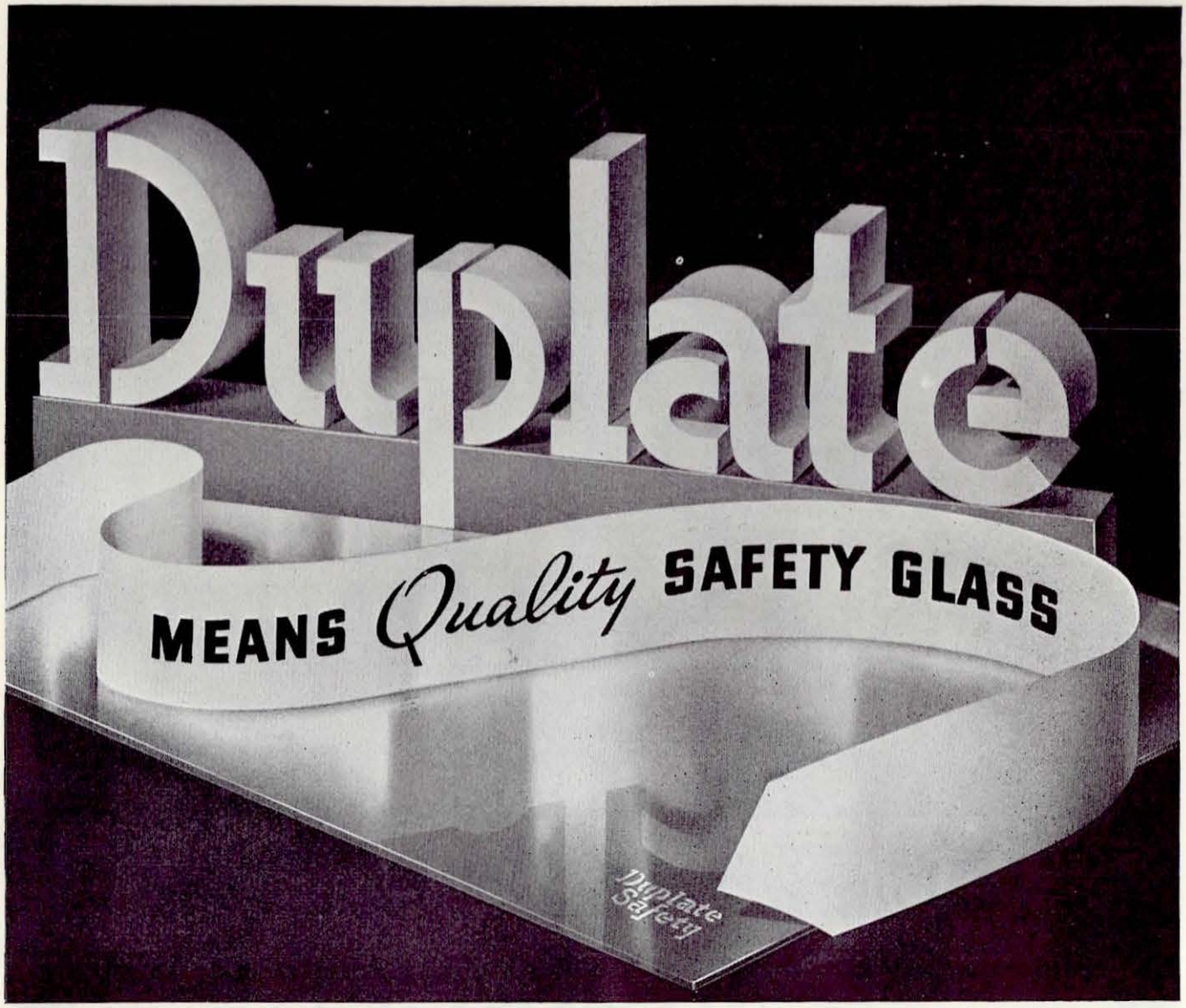
The use of Simplex Unit Cylinder Clasp Brakes on high speed trains, make possible high rates of retardation, without discomfort to passengers. The shorter stops permit higher scheduled speeds with safety.

The Simplex Unit Cylinder Clasp Brake is built to precision standards, to give uninterrupted service and low cost operation.



AMERICAN STEEL FOUNDRIES

NEW YORK CHICAGO ST. LOUIS



THE word "Duplate" etched in the corner of a light of safety glass, is your assurance of quality. For behind that word stands the glass-making ability, the half century of experience and research, the reputation and the resources of a manufacturer internationally known for its quality products . . . the Pittsburgh Plate Glass Company.

Make sure that new equipment has Duplate Safety Glass all around before you buy it. And when glass replacement is necessary in present equipment, call your nearest Duplate dealer, listed in the "Where to Buy It" section of your telephone directory. Meanwhile, why not write us for complete information on both Duplate Safety Glass and Duolite, the Safety Pennvernon Glass? Address Pittsburgh Plate Glass Company, Pittsburgh, Pa.

. . .

Listen to "The Music You Love" rendered by the Pittsburgh Symphony Orchestra and distinguished guest artists every Sunday from 2 to 2:45 P.M., E.S.T., over Columbia Network and associated stations.

Duplate Safety

Paint • PITTSBURGH • Glass
PLATE GLASS COMPANY

Safety

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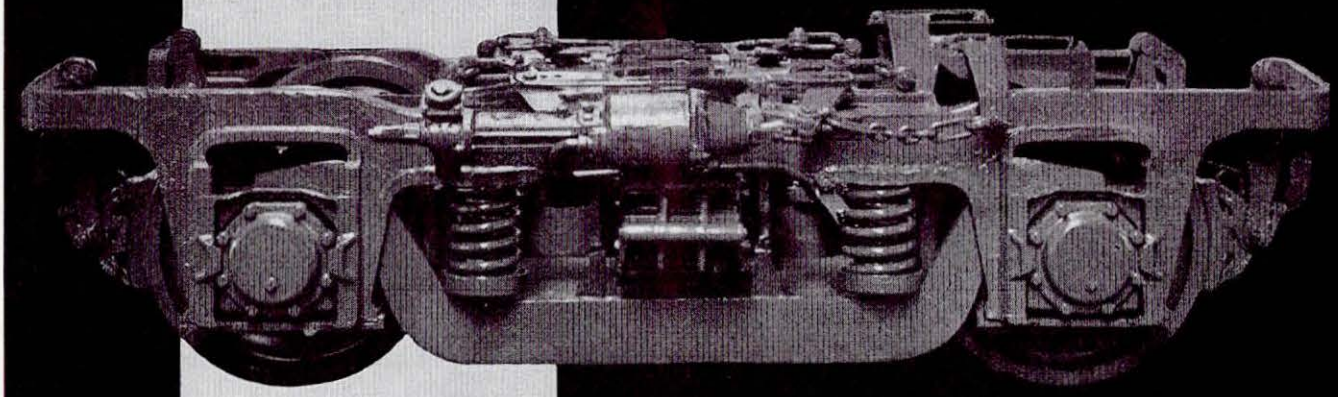
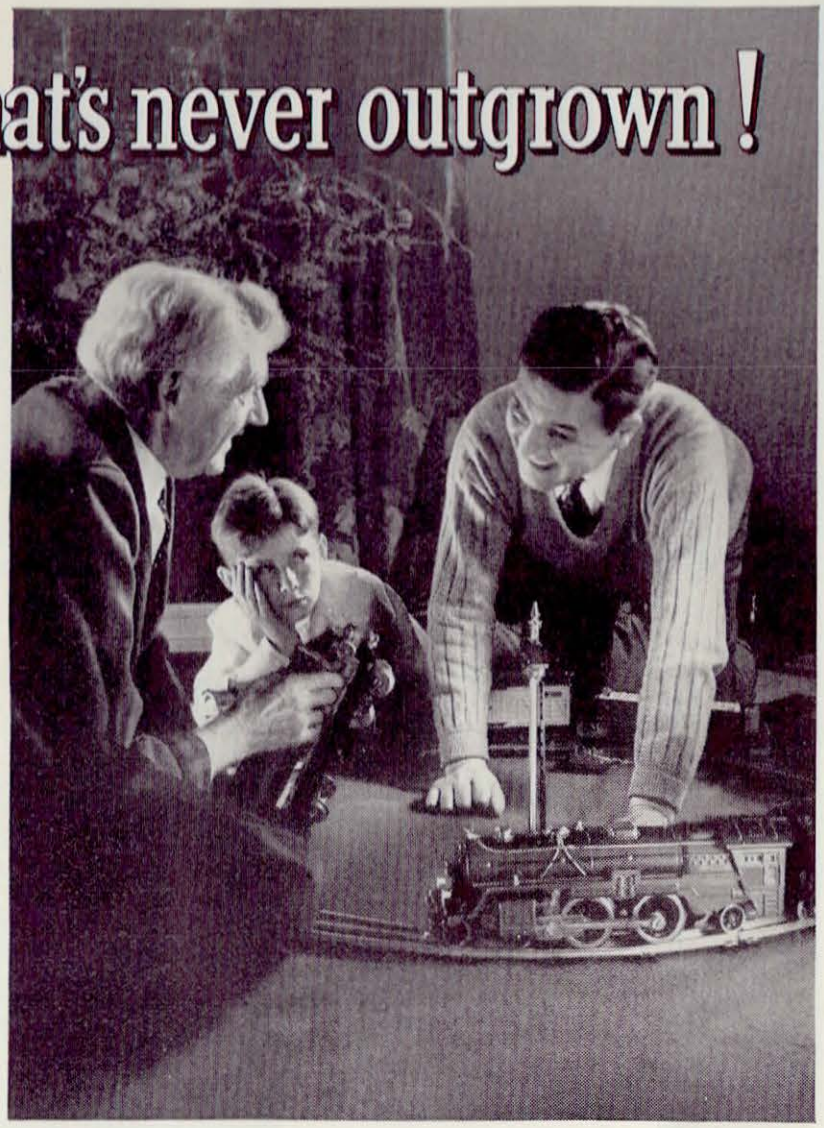


AMERICAN STEEL FOUNDRIES

NEW YORK CHICAGO ST. LOUIS

Fascination that's never outgrown!



YOU will find, in countless American homes on Christmas morning, eloquent evidence of the place railroads and railroading hold in the hearts of folks throughout our land.

In the memory of oldsters still living, the railroads completed the bold and romantic enterprise of binding the nation together with bands of steel from the Atlantic to the Pacific.

And by their enterprise today, the railroads continue to challenge the interest and stir the imagination of youngsters born and raised in an age of wonders.

Just as electricity has replaced the key and clockworks in many toy trains which gladden homes where they have a place under the Christmas tree—constant innovations contribute to the advancement of the nation's transportation and travel by rail.

You can doubtless name the more dramatic evidences of enterprises — air-conditioning, streamlined trains, electric and Diesel-electric locomotives—yet these are only the obvious symbols of a vastly greater program of betterment which moves forward every day and every year.

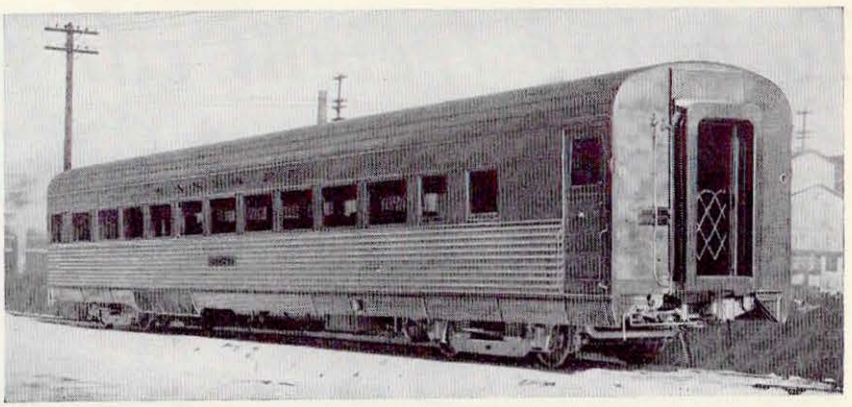
To take a single example: $172,000,000 have been invested during the past six years in laying heavier rails, an indispensable prelude to the *faster* schedules maintained today for both passengers and freight with a *safety* record which is the marvel of the world.

Yes indeed, the railroads are going ahead, in a way to make any railroad man lift his head with pride.

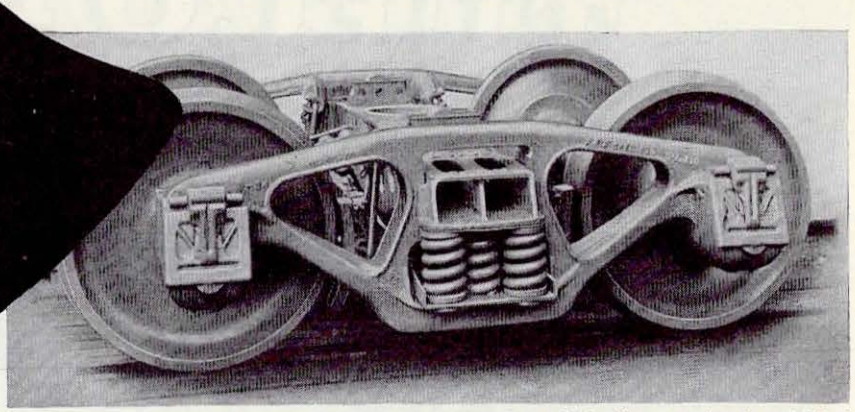
SAFETY FIRST— *friendliness too!*

ASSOCIATION OF AMERICAN RAILROADS

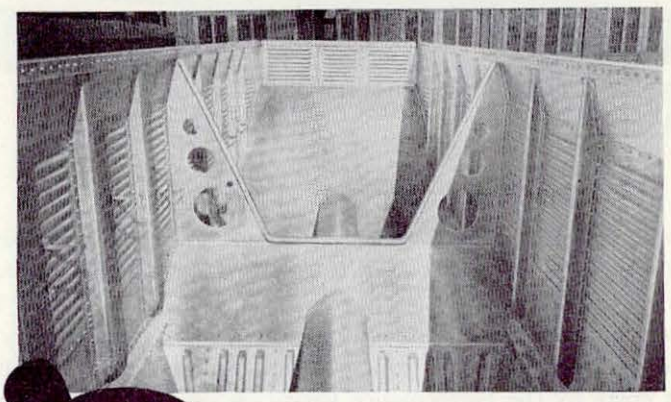
SOUNDS THE KNELL *of* USELESS WEIGHT



● *Stainless Chromium Nickel Steel de luxe day coach, built for the Atchison, Topeka & Santa Fe Railway by the Edward G. Budd Manufacturing Co. weighs only half as much as the conventional Santa Fe car. Truck frame castings also made of Nickel Steel castings contain 2% Nickel. These were produced by General Steel Castings Co., Eddystone, Pa.*



● *Side frame and bolster castings of Nickel Manganese Steel which effect a saving in weight of approximately 20% in the trucks of 200 new light weight freight cars for the Bessemer & Lake Erie R. R. Castings made by Pressed Steel Co., of Pittsburgh, and Buckeye Steel Castings Co., Columbus, Ohio.*



● *Interior view of Baltimore & Ohio hopper car, made of a high tensile copper - nickel-molybdenum steel produced by Republic Steel Corporation. Advantages: weight saving and resistance to atmospheric corrosion.*

During the past few years one of the outstanding developments in the economics of transportation has been the steady elimination of dead weight.

Rolling stock of every type is being made lighter without reduction in the required properties of strength, toughness and ductility.

As a result higher speeds are being attained with less consumption of fuel, while savings in dead weight are being converted into bigger pay loads.

Among the chief contributors to these economies have been the Nickel Alloy Steels. For through a partnership with Nickel, the simple steels of yesterday have been rendered tougher and stronger. . . more highly resistant to shock, stress, fatigue, abrasion, corrosion and wear.

NICKEL ALLOY STEELS

Pictured here are some of the applications where the greater strength-weight ratio of the Nickel Alloy Steels have resulted in railroad equipment of lighter weight. We invite consultation on the use of Nickel Alloy Steels, Nickel Cast Irons and other alloys containing Nickel in your equipment.

THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL ST., NEW YORK, N. Y.

To bring freight car upkeep down

—USE A DURABLE PAINT

IF you want to keep freight car maintenance costs *down*—use the paint that's built to *stand up*—TUFCOTE.

Whether it's maintaining old equipment or painting new cars, it will pay you to measure your paint costs by the performance yardstick and not by the cost per gallon.

TUFCOTE lasts longer. The pigments are selected only after long exposure tests to prove their durability, color retention and resistance to early failure by checking and flaking.

TUFCOTE is quick-drying. It gets cars off the paint track and back into revenue service faster. Two coats may be applied the same day, stenciling the following morning.

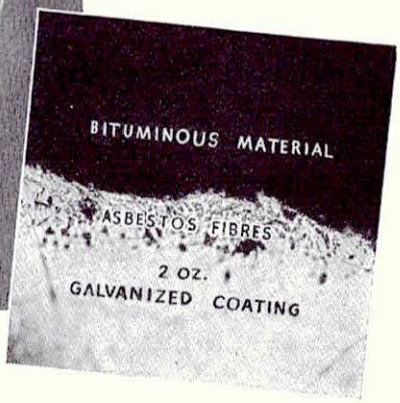
TUFCOTE is always supplied in ready-to-use consistency. No time lost in reducing operations. The mixing of all the ingredients by experienced men using proper equipment insures a uniform product which in turn gives durability and longer retention of good appearance.

Ask our representative about the lower costs per ton mile of this outstanding paint for freight cars and other du Pont finishes. E. I. du Pont de Nemours & Co., Inc., Finishes Division, Wilmington, Delaware.

Listen to The Cavalcade of America—East, Wednesdays, 8:00 P. M. E. S. T.; West, Thursdays, 8:30 P. M. P. S. T.

DU PONT
REG. U. S. PAT. OFF.

RAILWAY FINISHES



Left: The body of King Tut-Ankamen, preserved in asphalt, has withstood decay for 3000 years.—(Courtesy World Wide Photos). *Right:* As you can see from this photomicrograph, the bituminous material is actually "bonded" to the pipe, by means of asbestos fibres which are embedded in the galvanized coating.

CORROSIVE CONDITIONS won't harm This Improved Corrugated Iron Drain

Engineers have long realized the value of bituminous coatings, as a means of protecting metal surfaces against severe *corrosive* conditions. Pure bitumen, you know, is impervious to moisture and it resists more acids and alkalies than almost any other substance. Remember, too, that the smooth, thick *pavement* in the bottom of Armco Paved Invert Pipe is a special grade of pure bitumen—proved by 10 years of drainage service.

Now . . . Armco engineers have discovered a way to "bond" a complete bituminous *coating* to the pipe in such a manner that it *will stick indefinitely*. This new process, known as Asbestos Bonding, also widens the plastic range of the bituminous material—as much as 50 per cent.

No wonder *Asbestos Bonded* Armco Paved Invert Pipe appeals so strongly to railway engineers. Besides being permanently sealed against corrosive influences, this pure Ingot Iron pipe offers many other advantages that simply cannot be obtained with heavy, rigid materials.

Just get in touch with our nearest office and they will gladly send you complete data describing this special railroad drain.

★ ★ ★

INGOT IRON RAILWAY PRODUCTS CO., Middletown, Ohio, Berkeley, California, (Member of the Armco Culvert Mfrs. Assn.); Philadelphia, St. Louis, Salt Lake City, Los Angeles, Minneapolis, Houston, Portland, Atlanta, Denver, Chicago, Dallas, El Paso, Spokane, Cleveland, Pueblo, Sidney, Richmond.

ARMCO

ASBESTOS BONDED Armco Paved Invert Pipe

The

EDW. G. BUDD MANUFACTURING COMPANY

is pleased to announce

the receipt of an order for

six light-weight stainless-steel trains

from the

CHICAGO, ROCK ISLAND and PACIFIC RAILROAD

This order includes four three-car trains and two four-car trains, all Diesel-electric powered. The three-car trains will accommodate 162 passengers each—the four-car trains, 222. Like all Budd-built trains, their equipment and appointments will be thoroughly modern. They will be fabricated by the exclusive Budd SHOTWELD process. These new trains will be partly articulated, and will be operated on fast daytime runs out of Chicago.

Can a Freight Train be A MENACE?

WE point out that a passenger train is only as safe as the freight it passes. Safeguards considered necessary for one are equally necessary for the other. That's why USS Wrought Steel Wheels, accepted as standards of excellence in passenger service, are also indicated for every freight car on your line.

Remember these facts: USS Wrought Steel Wheels offer increased insurance against breakdown—lighter weight—lower cost per thousand miles of service. Already these superior wheels have demonstrated their safety under high speeds, their stamina under heavy loads. In freight service USS Wrought Steel Wheels give increased resistance to shock and impact, uniform resistance to wear, definitely longer life.

U·S·S WROUGHT STEEL WHEELS

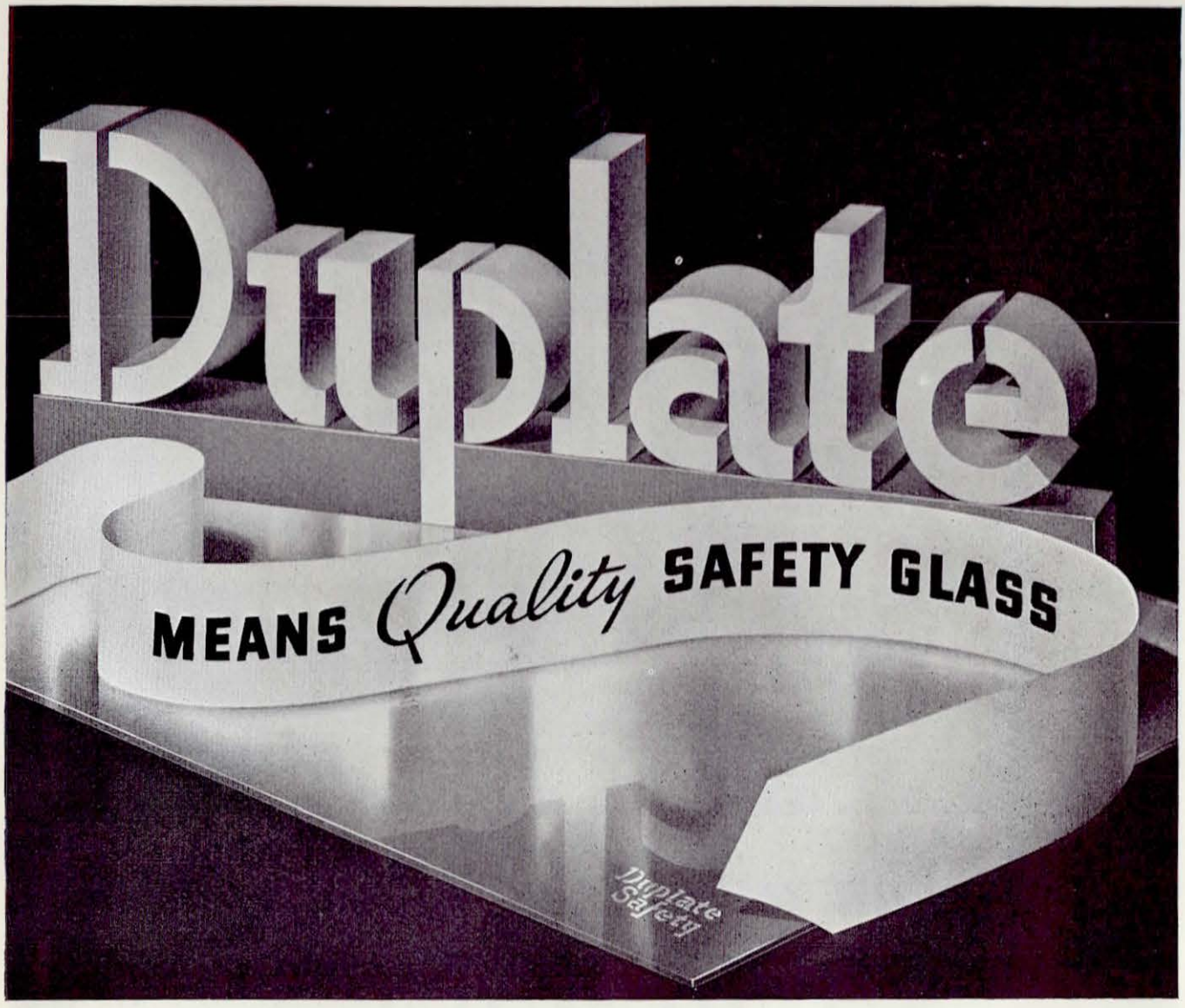
CARNEGIE-ILLINOIS STEEL CORPORATION

Pittsburgh — *Chicago*

Columbia Steel Company, San Francisco, *Pacific Coast Distributors*

United States Steel Products Company, New York, *Export Distributors*

UNITED STATES STEEL



THE word "Duplate" etched in the corner of a light of safety glass, is your assurance of quality. For behind that word stands the glass-making ability, the half century of experience and research, the reputation and the resources of a manufacturer internationally known for its quality products . . . the Pittsburgh Plate Glass Company.

Make sure that new equipment has Duplate Safety Glass all around before you buy it. And when glass replacement is necessary in present equipment, call your nearest Duplate dealer, listed in the "Where to Buy It" section of your telephone directory. Meanwhile, why not write us for complete information on both Duplate Safety Glass and Duolite, the Safety Pennvernon Glass? Address Pittsburgh Plate Glass Company, Pittsburgh, Pa.

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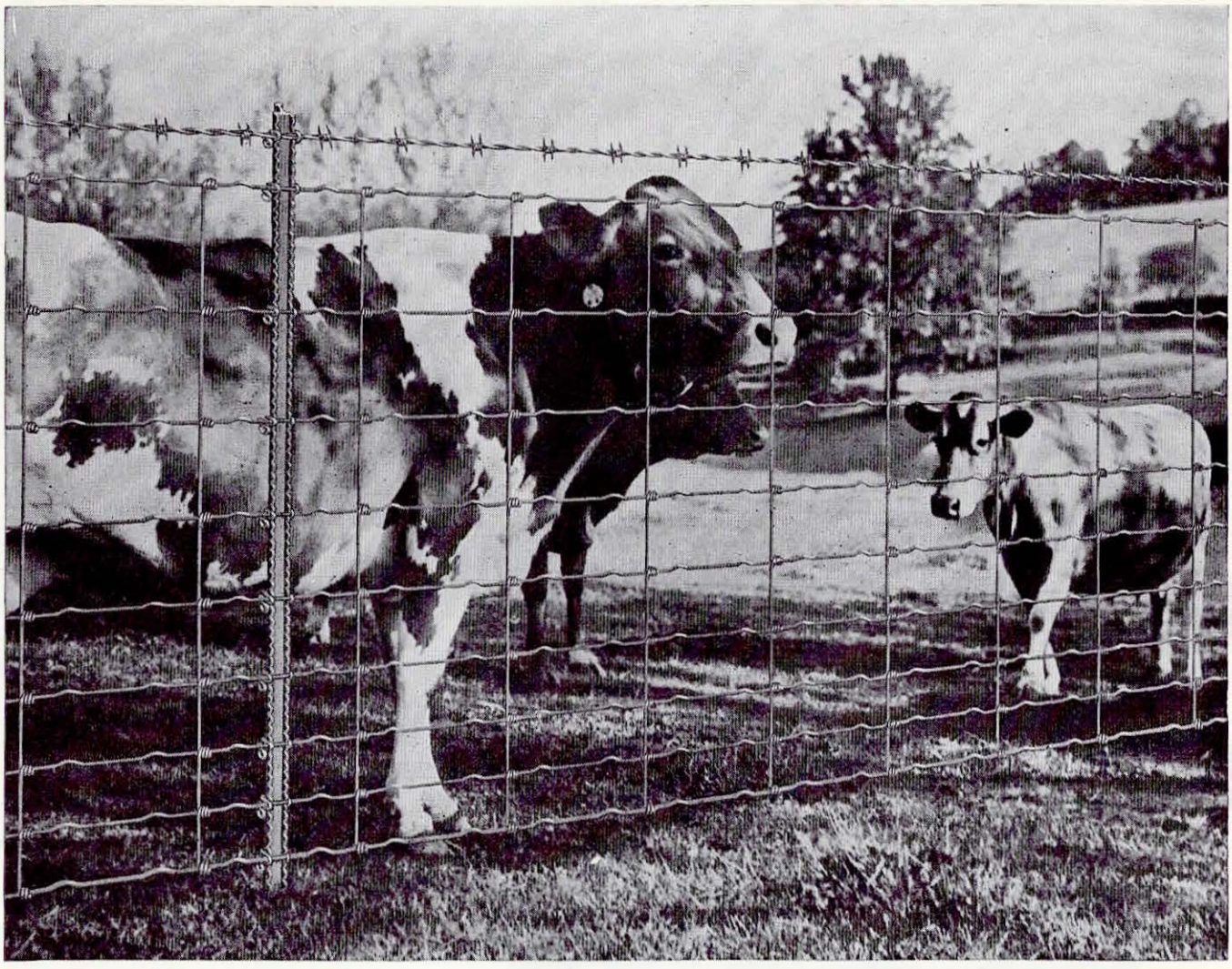
Duplate Safety

Paint · PITTSBURGH · Glass
PLATE GLASS COMPANY

To reduce stock claims . . .

fence the Right-of-Way



EACH year millions of dollars are spent protecting life and property at crossings, but what about the Right-of-Way?

The best way to reduce stock claims is to fence the Right-of-Way. The most economical protection is offered by American Railroad Fence and Banner Steel Line Posts. These products, including National Expanding Anchor End and Corner Posts, meet all specifications of the American Railway Engineering Association.

American Railroad Fence is made of medium hard wire, tough and sturdy. It is full gauge with rust resisting Copper Bearing Steel. The smooth, evenly coated galvanizing affords a full measure of protection against corrosion. The famous American Hinge Joint gives the flexibility that is necessary to withstand the heavy pressure of live stock. The use of these products is not only insurance against the adjustment of costly stock claims, but protection for life and property. Write for a personal consideration of your problems.

AMERICAN RAILROAD FENCE *and* BANNER STEEL POSTS

AMERICAN STEEL & WIRE COMPANY, *Chicago-New York* · COLUMBIA STEEL COMPANY, *San Francisco* · TENNESSEE COAL, IRON & RAILROAD COMPANY, *Birmingham*

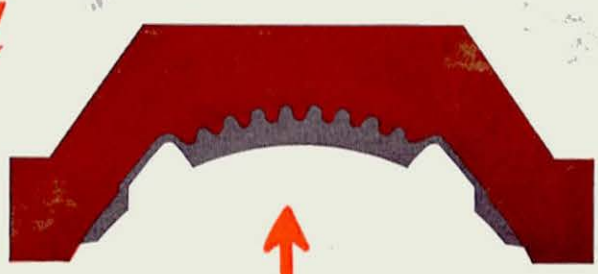
United States Steel Products Company, New York, *Export Distributors*

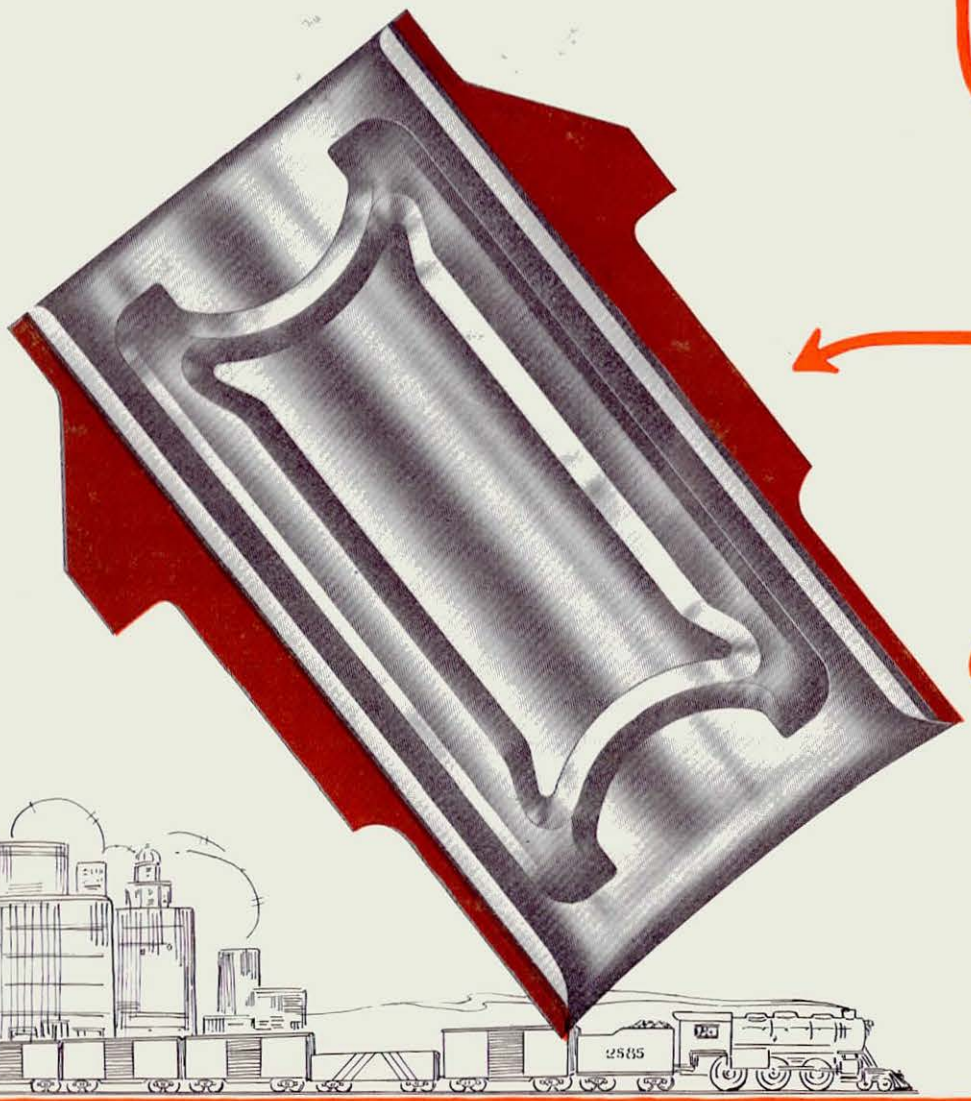
UNITED STATES STEEL

Approved by A.A.R.

Security Bond Journal

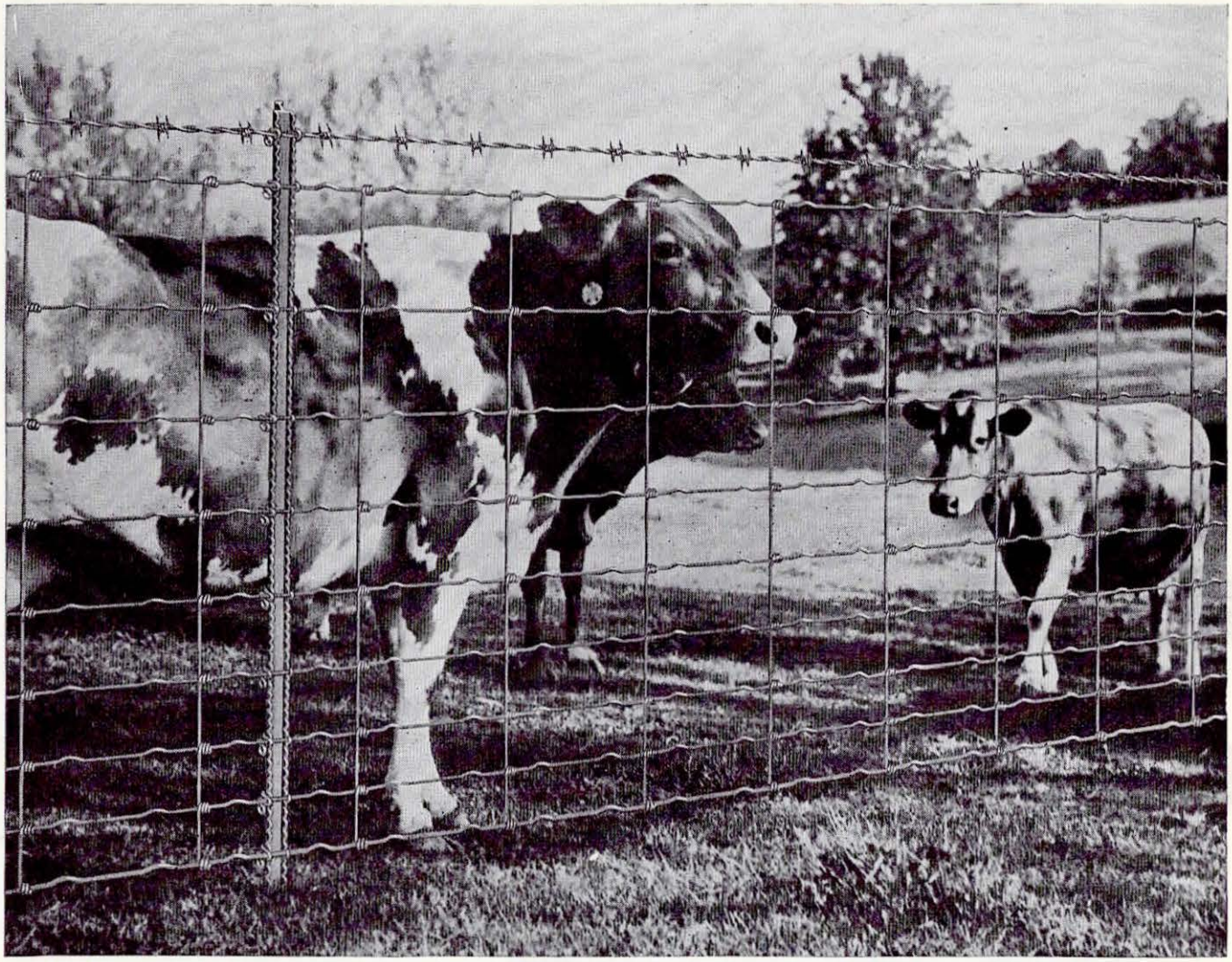
Security Bond
overcomes loose
or cracked linings





Oil Control
insures uniform distribution of oil over load-carrying area and in the packing—also overcomes the damaging effects of waste grabs by trapping the waste in the channels.

To reduce stock claims . . .
fence the Right-of-Way



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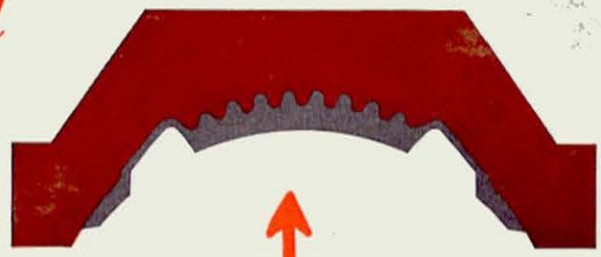
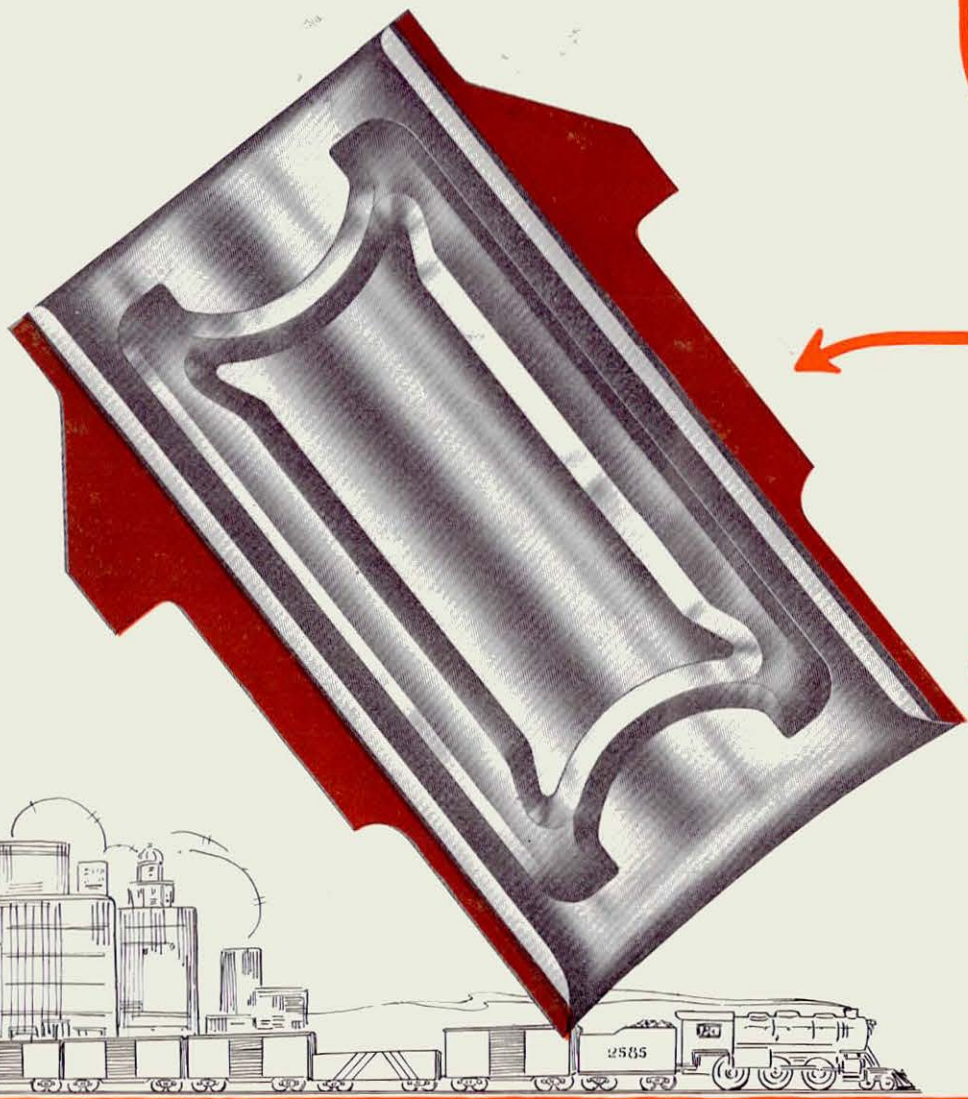
UNITED STATES STEEL

Approved by A.A.R.

Security Bond Journal

Security Bond
overcomes loose
or cracked linings





Oil Control
insures uniform distribution of oil over load-carrying area and in the packing—also overcomes the damaging effects of waste grabs by trapping the waste in the channels.

for Interchange —

Oil Control

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Reduce your Hot Boxes

These Bearings conform in every respect to the standard dimensions prescribed by A. A. R. rules, but in addition have two major improvements which have successfully reduced hot boxes due to waste grabs, loose or cracked linings and improper oil distribution.

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Oil Control Feature — A novel system of lubricating channels controls the flow of lubrication in the following manner: Oil enters lengthwise feed side channel and lubricates load-carrying area; excess oil is by-passed through circular grooves to channel on discharge side. Thus the entire bearing surface is uniformly lubricated and the drippage into the packing is equalized, reducing lubricating difficulties when direction of equipment is reversed. Oil control channels also overcome the damaging effects of waste grabs by trapping the waste. S. B. O. C. Bearings have been in successful use since 1933—they lower your operating costs by giving you longer mileage and reducing your bearing troubles.

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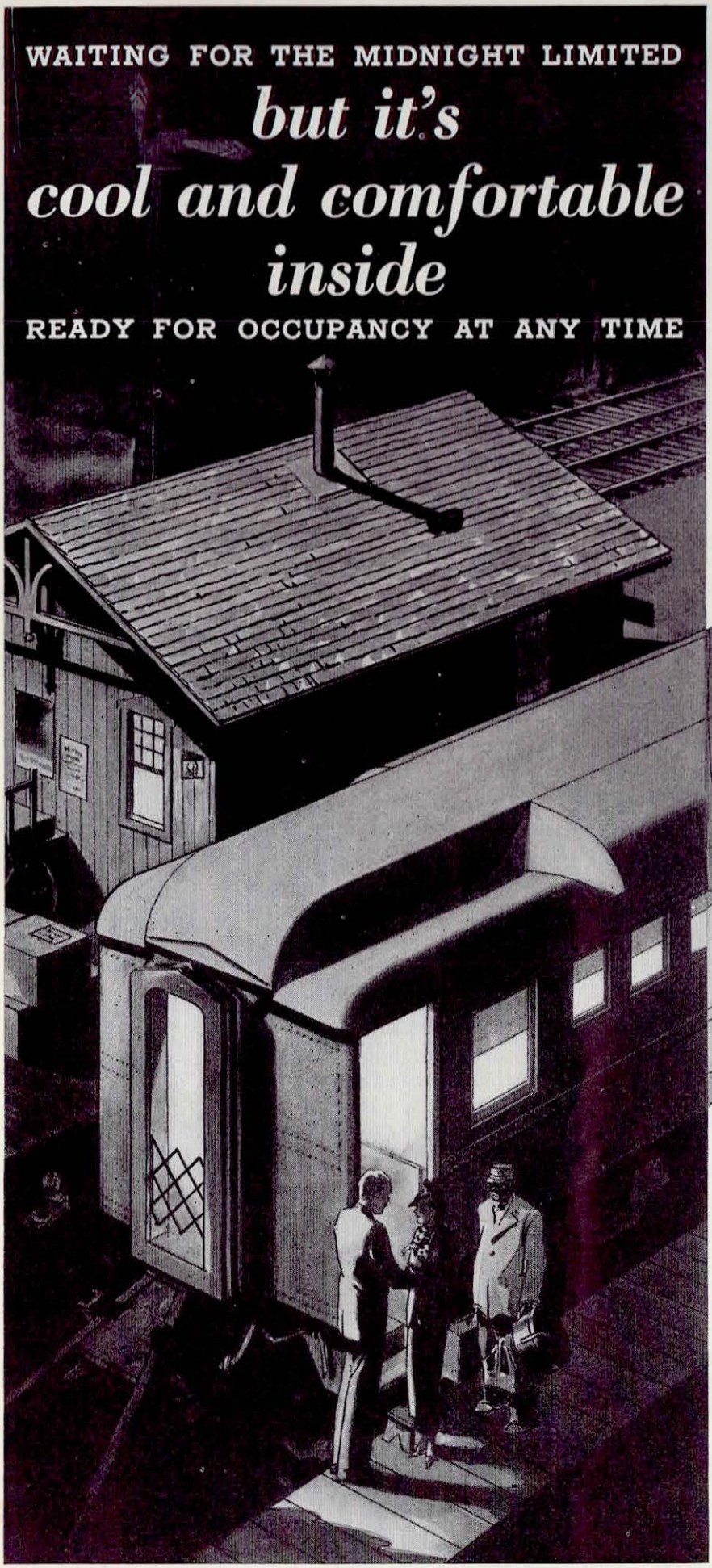

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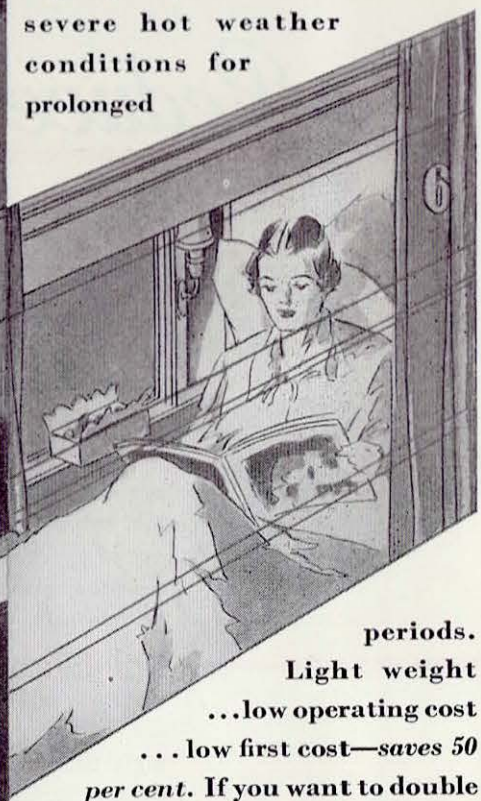

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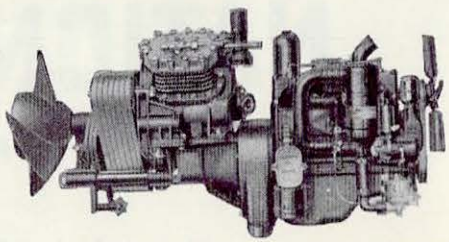

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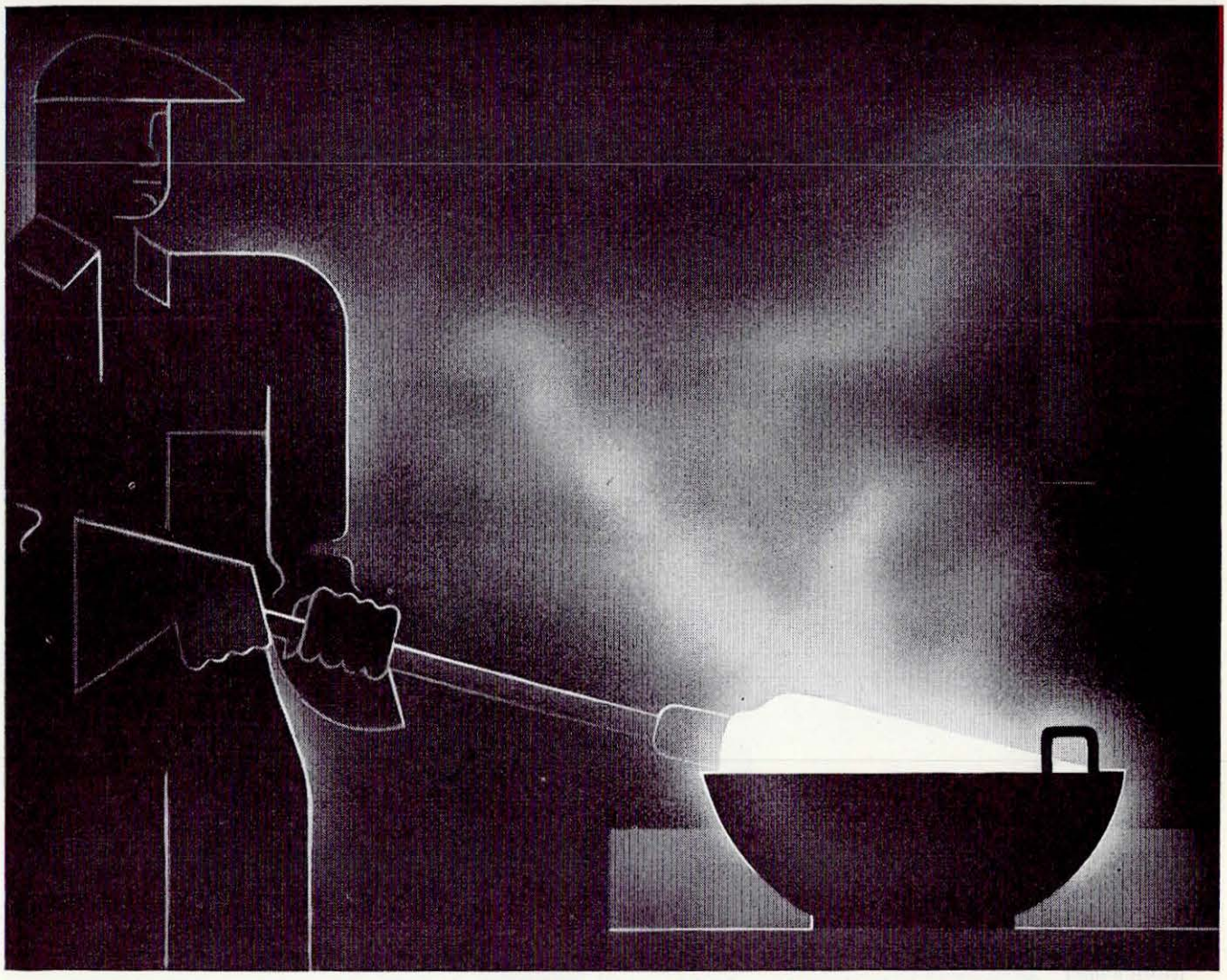

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UNION PACIFIC SAYS:

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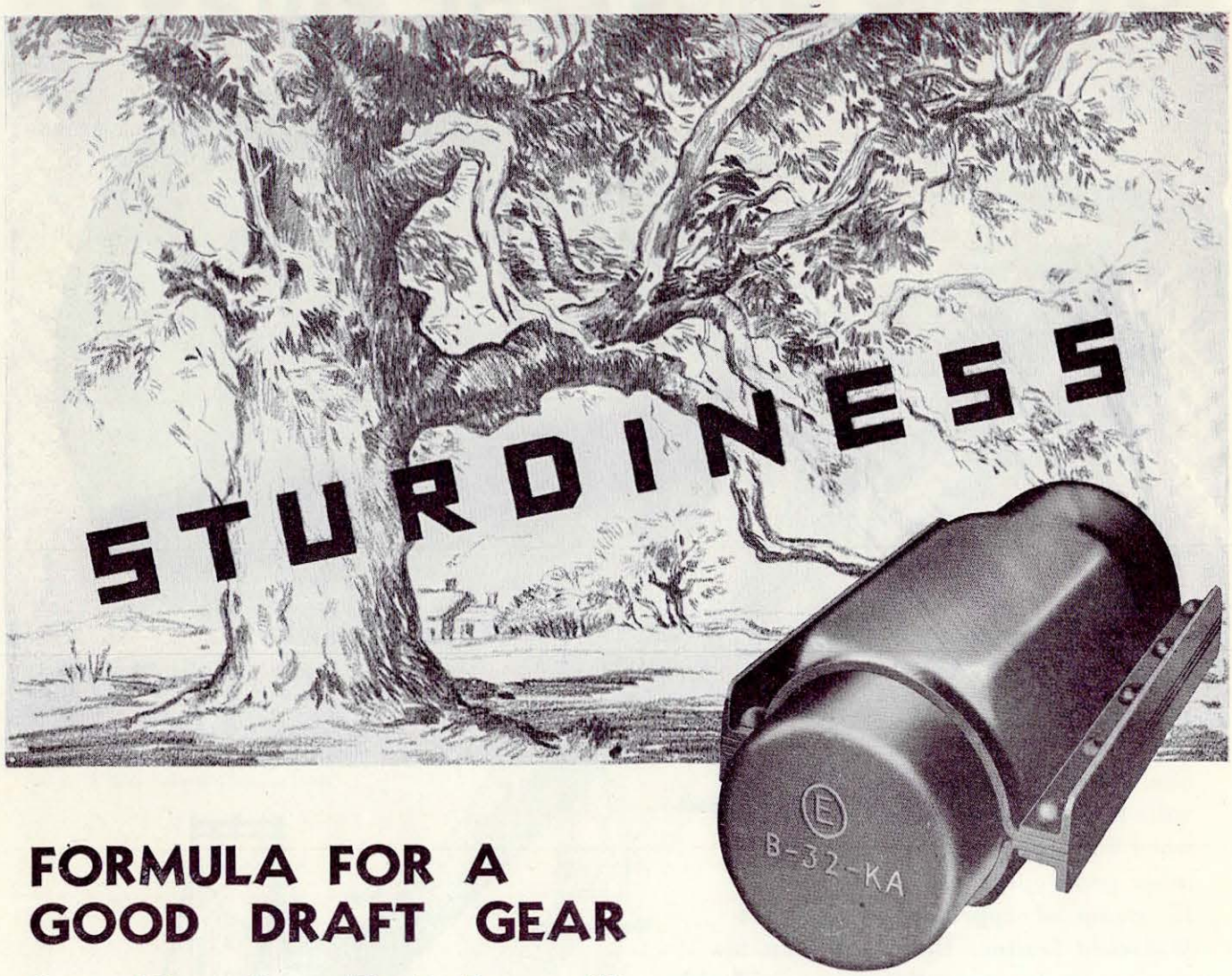

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E = **Long Endurance**
E_{RS} = **Edgewater Ring Spring**

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THE new fleet of streamline bridge trains which the Key system will operate over the famous Bay Bridge between San Francisco and Oakland will be equipped with Heywood-Wakefield Seats. Thus, another great operating system places its stamp of approval on Heywood-Wakefield Seating. During the past few years, it has been our pleasure to work with transportation companies all over the country . . . cooperating with engineering and maintenance staffs . . . helping to solve the seating problems of modern, faster, lighter trains and cars. We shall be pleased to work with you in practical manner on any seating problem. *A note to our General Office in Gardner, Mass., will bring detailed information without cost or obligation on your part.*

HEYWOOD-WAKEFIELD

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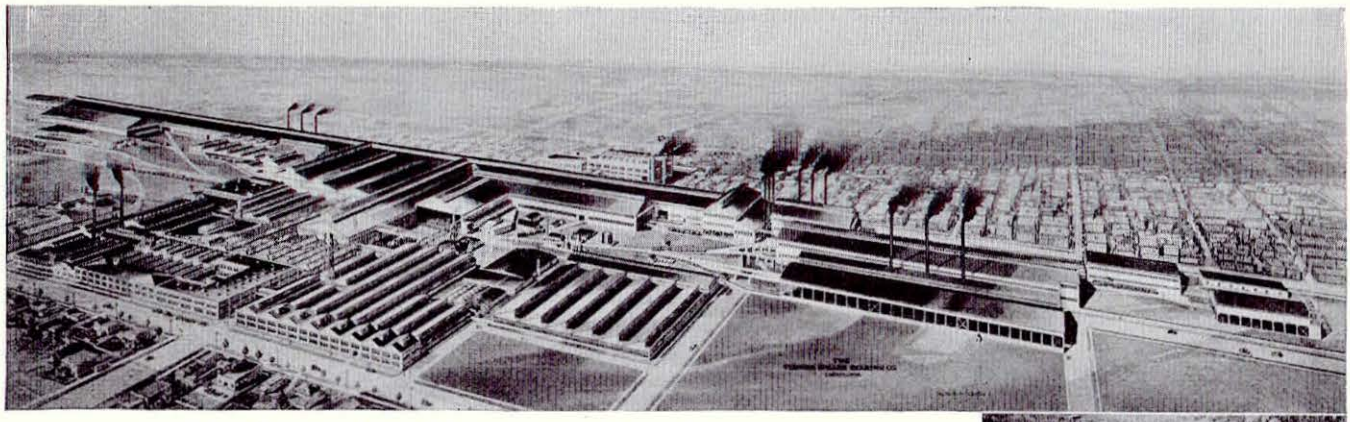
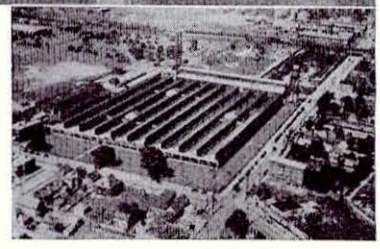


Aerial view of Canton plants of The Timken Roller Bearing Company and The Timken Steel & Tube Company.



Aerial view of the Columbus plant of The Timken Roller Bearing Company.

A DEPENDABLE ALL-AMERICAN SOURCE OF SUPPLY FOR RAILROAD BEARINGS

The large modern plants of The Timken Roller Bearing Company at Canton, Ohio, and Columbus, Ohio, have a capacity that assures any present or future demand for Timken Railroad Bearings.

Every process in the production of Timken Railroad Bearings — from the manufacture of the steel to the finished product—is carried out in a 44 acre plant by means of millions of dollars worth of American precision machinery operated by thousands of experienced American workmen. Furthermore, there is no delay in the transportation of the bearings from factory to delivery point.

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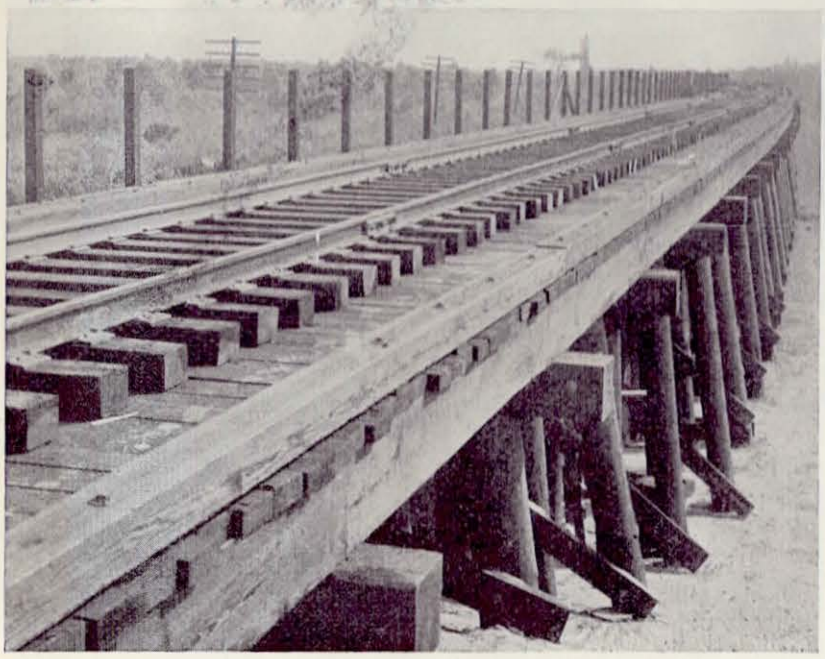
THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

TIMKEN *TAPERED ROLLER* **BEARINGS**

FOR PERMANENT ECONOMICAL CONSTRUCTION



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Railway Age

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Vol. 101 December 5, 1936 No. 23

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Samuel O. Dunn, chairman of Simmons-Boardman Publishing Corporation, discusses need for continued increase in net operating income to enable carriers to consummate great improvements in service which have been launched.

Wabash Completes New Missouri River Crossing at St. Charles ... 821

A description of this structure and the grade revision on approaches, which afford improved service west of St. Louis.

Frisco Builds New Passenger Cars 825

An article describing six all-welded cars, modern in design and equipment, which this road has placed in service during the past two years.

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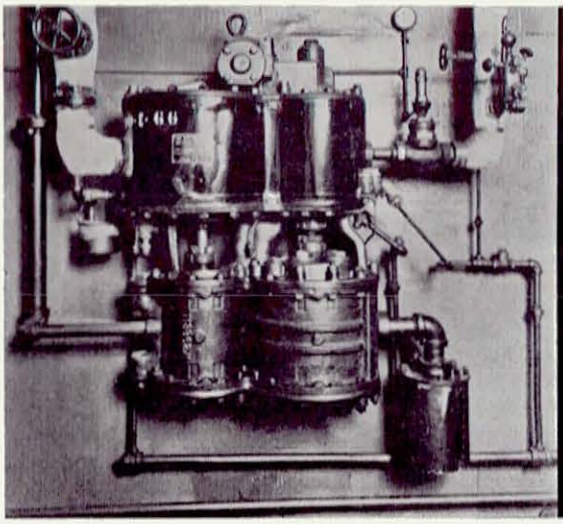
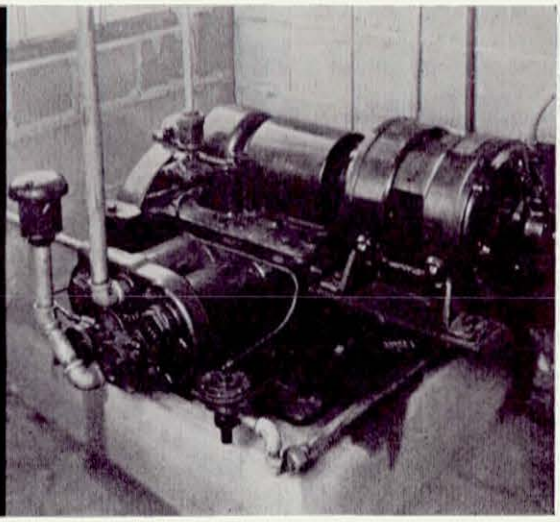
WESTINGHOUSE AIR COMPRESSORS





FOR every conceivable pneumatic requirement in railroad shops or yards there is available a Westinghouse Air Compressor of suitable type and size — steam-driven or motor-driven . . . While there is diversity of form and purpose in these machines there is uniformity in quality and performance. They possess unique design features and are well built. Reliability, economical operation, and unusually long life are their outstanding characteristics.

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(9117-A)

The Week at a Glance

1700 MORE COOL CARS: The railroads and the Pullman Company have air-conditioned 1,698 additional cars in the last six months, according to President Pelley of the A.A.R. This brings the total air-conditioned cars in the country up to 7,846, over half of them being Pullmans.

●

REPAYING R.F.C.: The New York Central has closed its account with the Reconstruction Finance Corporation, having made a final payment of 16 millions on November 30; the settlement including also 7 million of collateral notes originally sold by the railroad to the P.W.A. The Central is the 25th road which has paid in full and closed its account with the R.F.C. Railroad repayments so far (including premiums on securities sold to private investors) total 310 millions—with 412 millions still outstanding (including 67 millions of railway obligations acquired by the R.F.C. from the P.W.A.).

●

EARNINGS: Advance reports for October, from roads which report better than 98 per cent of gross revenues, show net railway operating income in October at 88 million—up just under 20 per cent over last year. Gross revenues (385 millions) were slightly under 15 per cent better than last year and operating expenses were up 12 per cent. But the tax collector's interest, as usual, grew faster than anyone else's. October taxes (28 million) were almost one-third greater than last year.

●

CARLOADINGS: Continue to hold at high levels. The total for the November 21 week—789 thousand—was up 4,800 cars from the preceding week and exceeded the same week last year by almost 22 per cent. The total was better than 12½ per cent above the same week in 1930.

●

NEW HAVEN PROBE: Chairman Mahaffie of the I.C.C. and a coterie of assistants held in New York this week the hearings in the investigation of the financial history of the New Haven Railroad. Investments in trolley properties prior to 1913, it seems, were ill-advised. Not very startling news, to be sure, in view of the autopsy held over these same remains years ago; but important enough in the Commission's eyes, apparently, to justify keeping a half dozen of the road's most important officers away from the job for several days—to say nothing of the time they had to spend in preparing their case for presentation.

●

LABOR SHORTAGE: Unless governmental policies are adopted to curtail the rapid recovery now occurring, unemployment will soon disappear and an actual labor shortage will occur—such is the prediction of *Railway Age's* editor, Samuel O. Dunn, in an address reported herein. There is no reason—outside of curbs on production by misguided "make work" policies—why the incomes of persons earning less than $2,500 a year should not soon be doubled.

LOW TRUCK WAGES: Former Co-ordinator Eastman has released his report on wages and working conditions in intercity trucking. Drivers' hours per week in October, 1935, averaged 51.6 and their hourly earnings were 56.1 cents. (These figures were taken from a small sample, about 3100, in an occupation in which 121,000 persons are estimated to be engaged.) A standard day of 10 hours or more was reported by companies employing 40 per cent of the drivers. Variations in both hours and pay between different employers and different sections of the country were extremely wide.

●

SOME R.R. WAGES LOW: Leaning over backward in his effort not to favor the railroads as against their highway competitors, Mr. Eastman this week followed his report on low wages and long hours in intercity trucking with a report on the lowest wages and longest hours he could find on the railroads. The two reports are not comparable, because the truck investigation covered all employees, whereas the railroad report was one of the lowest wages and longest hours to be found. If similar information had been reported from the truckers—Wow!

●

MORE POWER TO YOU: A familiar exhortation which might characterize the railroads' locomotive orders last month—174 in all. But not only power, but cars and rail as well are on the way up, as is shown in the *Railway Age* monthly summary. Last month's passenger car orders totaled 50, plus 1,550 more for freight service; and six streamlined trains and 277 thousand tons of rail besides. And take a look at the locomotive, car and rail orders reported in this week's news columns! It looks as if 1936 orders would top 1930.

●

ST. CHARLES BRIDGE: New Wabash structure across Missouri river permits operation of locomotives with a tonnage rating increase of 50 per cent. Line revision has reduced ruling grade from 1 per cent to 0.5. The new structure, described herein, replaces one built 65 years ago.

●

FRISCO'S NEW CARS: The Frisco has built in its own shops 7 all-welded passenger cars for specialized services with a saving in weight of 15 tons per car. An illustrated article elsewhere in this issue describes them.

●

WARNING TO INVESTORS: The Wall Street Journal expresses the opinion that railway security owners are lagging behind managements in their zeal to get railroads out of hock to the R.F.C. The investors in roads in bankruptcy, it says, are haggling over reorganization terms while not recognizing the danger of continued dependence on government financing. "The return of prosperity traffic will be of no great use to the owners of railroads unable fully to equip themselves for it."

JUNE EXHIBITS: The Mechanical Division, A.A.R., will hold its annual meeting in Atlantic City, with exhibits, on June 16-23, reviving a custom which has been in abeyance since 1930.

●

RAILWAY BUYING: The sharp increase in railway purchases, the effect it is having in reducing unemployment and how this favorable influence can be made to continue is the theme of the leading editorial in this issue, based in part on statistics for nine months' purchases given in a short article elsewhere in the issue.

●

TURKEY DAY TRAVEL: Passenger business on the Eastern roads over the Thanksgiving holiday showed increases ranging up to 75 per cent over last year. Out of New York the New Haven reported its business nearly double that of last year, and other roads reported increases ranging from 20 to 50 per cent.

●

WORLD'S FAIR: The management of the World's Fair planned for New York in 1939 are vigorously at work on the project, including the task of raising money; and in the latter connection G. M. Dahl, chairman of the Brooklyn-Manhattan Transit Corporation, and W. F. Cutler, president of the Southern Wheel Company, have been named to head the committees for the transportation and railway supply industries, respectively.

●

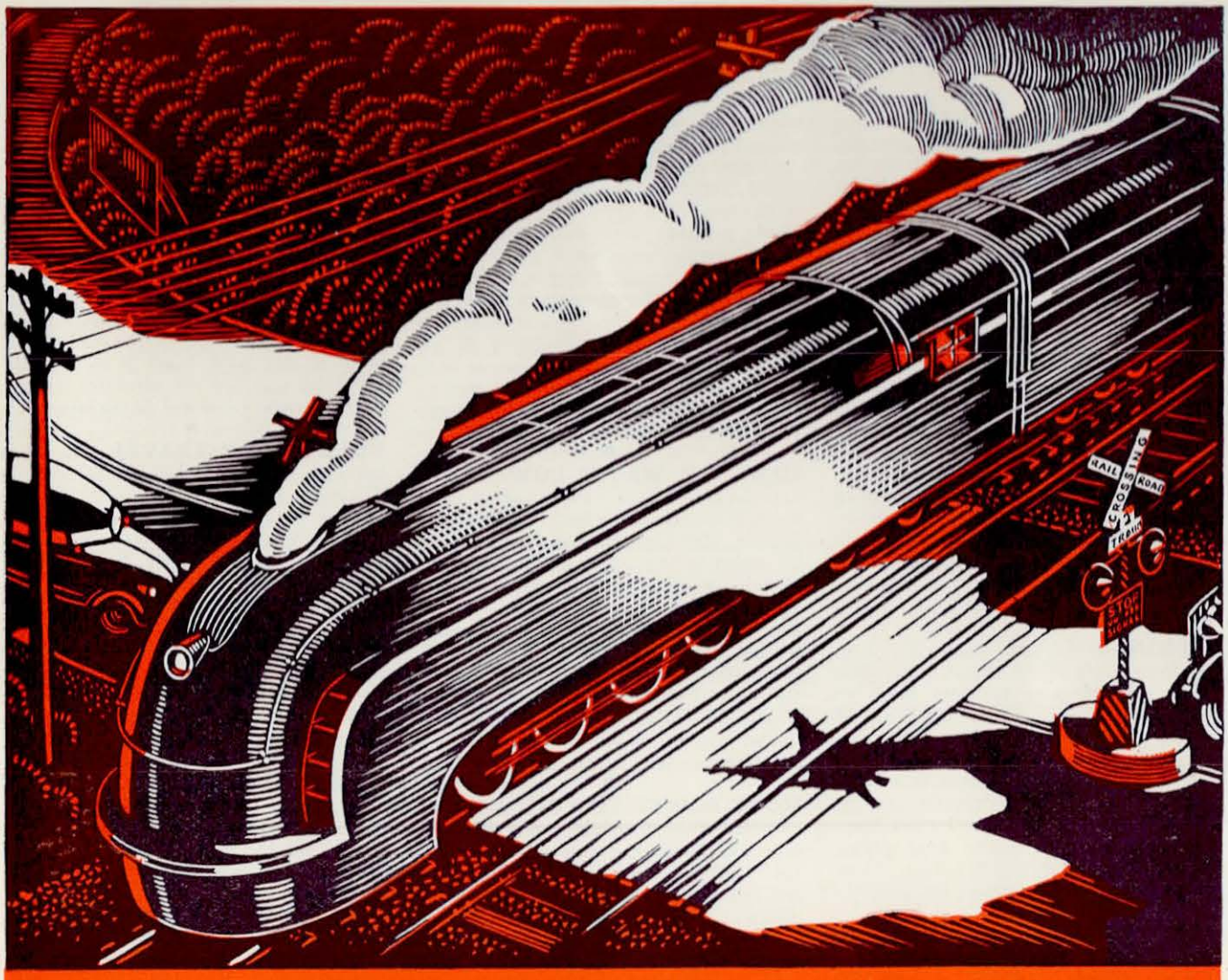
WHEELER SIDESHOW: The Senator from Montana, sponsor of a government ownership bill in the last session of Congress, will renew his publicity offensive on railway financial practices on Monday, December 7, when hearings before his special committee will begin in Washington. The Van Sweringen relicts will be the first to face the spotlight.

●

WESTINGHOUSE: The American Society of Mechanical Engineers honored the memory of the great engineer and inventor this week—there being reviews of his achievements by a large number of distinguished citizens, among them President Angell of Yale University, Ralph Budd, Paul Cravath and Samuel Vauclain.

●

LEGISLATION: The legislation required in the interest of the railroads to the securing of which the A.A.R. will devote its energies at the coming session of Congress consists of but two bills—(1) the Pettengill measure repealing the long-and-short-haul clause of the Interstate Commerce Act and (2) regulation of domestic water carriers by the I.C.C. This program was set forth last week in a circular sent by President Pelley of the A.A.R. to "those whose interest in railroads is more than casual." He also called attention to the effort being made to secure a readjustment of the freight rate structure, and to the danger of restrictive labor legislation, which would increase railroad costs and cripple them in meeting competition of other carriers.



THE IRON HORSE STRETCHES HIS LEGS

Under its pleasing exterior streamline, modern power combines speed and capacity with careful design and modern materials that increase safety, reduce weights and lower maintenance. » » » Starting with the streamlining, there is a Republic steel to meet every locomotive need. » » » Republic Double Strength Steel combines high strength, light weight and high resistance to corrosion — qualities which make it ideal for streamlining effects. » » » Toncan Iron for fireboxes provides longer life and lower maintenance. It is highly resistant to corrosion and to pitting and fire cracking. » » » Agathon Alloy Staybolts offer unusual resistance to corrosion, high tensile strength and high resistance to vibration. » » » Agathon Alloy Steels for rods, pins, engine bolts and other highly stressed parts provide the added strength and shock-resistance that permit lighter weight parts and safeguard against failure. » » » Republic steels are modern steels — they assure maximum service, dependable and economical performance of modern power. » » » Whatever your problems in steel, our metallurgists will gladly consult with you. Address Department RA. » » » » » » » » » »

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ROOFING SHEETS CAR SHEETS and sheets for all purposes are made by Republic in steel, Toncan Iron and special analyses.

What Business Needs

The trend of railroad freight loadings, the best single measure of the total volume of business being done in the country, shows plainly what business will mainly need in the near future. This is, to be let alone and thereby allowed to continue its improvement.

Car loadings made relatively the largest increase in the first three weeks of November that they have made in any equal period since the depression began. In October, when they were 71½ per cent of the 1925-1929 average, they were the largest, allowing for seasonal variations, since July, 1931; and in the first three weeks of November they increased to 77 per cent. This made them larger than in the corresponding weeks of 1930, they having been 2,309,825 cars in 1930 and 2,333,490 cars in 1936. This is the first time since recovery began that loadings in any period have been larger than in the corresponding period of 1930; and a remarkable gain was made in the week ending November 21, when loadings were almost 13 per cent larger than in the corresponding week of 1930. This large increase, following the steady and accelerating increase that has been occurring for almost a year and a half, apparently can mean only one thing. This is that the improvement in general business is steadily acquiring more momentum and can be confidently expected to continue unless interrupted by influences not now operating.

Continued Increase of Railway Earnings and Buying

The effects on railway earnings of the increases occurring in both freight and passenger traffic are illustrated by the financial results reported for October. A rapid increase in net operating income was occurring in the fall of 1935, and the net of about $75,000,000 earned in that month was the largest reported for any month since October, 1930. The net operating income of 131 railways increased in October, 1936, however, to almost $88,500,000. While this was only a 20 per cent increase over October, 1935, it was an 80 per cent increase over October, 1934, and was only 20 per cent less than was earned in October, 1930. And in considering the gains in net operating income being reported this year it must be remembered that they are being made in spite of large increases in expenditures for maintenance and large charges to taxes being caused by the Social Security and Railroad Retirement legislation. Freight loadings indicate that the net operating income earned in November was relatively larger than in October.

The increases of traffic, gross earnings and net operating income are having an increasingly stimulating effect upon railroad buying. In the first nine months of 1936 purchases of equipment and materials from the manufacturing industry aggregated about $500,000,000, an increase over the first nine months of 1935 of 65 per cent. Of this about $384,000,000 was spent for materials and supplies and about $114,000,000 for cars and locomotives. The only approximately complete information regarding purchases in October and November is as regards equipment and rail. Statistics regarding the number of units of equipment and tons of rail ordered in October and the first 10 months of the year were published in the *Railway Age* of November 7, page 654.

November Banner Month of Equipment Buying

November has thus far been the banner month of the year in the markets for rolling stock and rail. In its four issues in that month *Railway Age* reported domestic orders for 174 locomotives, 1,550 freight cars, 50 passenger-train cars, six streamlined trains and 277,472 tons of rail. Included in the foregoing were the New York Central's orders for 100 steam locomotives, constituting the largest single purchase of that type of motive power reported since 1930. Also the rail tonnage ordered marked a six-year high, being larger than reported for any other month since January, 1931.

The 174 locomotives ordered last month was but 6 short of the total of 180 ordered throughout the previous 10 months, and brought the 11-months total to 354. This is not only more than four times the 83 locomotives ordered during the entire year 1935 but is also 34 more than the total ordered during the four years 1932-1935, inclusive. Furthermore, there was placed last month the order for power units for the Rock Island's six streamlined trains alluded to above, and there were outstanding on December 1 inquiries for 72 locomotives.

The orders for 1,550 freight cars reported in November pushed this year's total to 40,214. This compares with 18,699 ordered throughout 1935, and indicates that the 1936 business, already much better than that of any full year since 1930, is in a fair way to move far past the latter's total of 46,360, as there are pending inquiries for more than 11,000 cars which may be converted into orders within the present month. Also, there were ordered last month 10 freight cars for export, bringing this year's export total to 526 as

compared with the 110 freight cars ordered here for export during 1935.

Orders for Rail Largest Since 1929

November's orders for 50 passenger-train cars are exclusive of articulated units for the six streamlined trains. These latter brought to 10 the total number of trains of this type ordered up to November 30 as compared with three in 1935. Again excluding these trains, a total of 204 passenger-train cars was ordered during the first 11 months of this year. This is more than three times the 63 ordered throughout 1935, and exceeds the business of any full year since 1930 excepting 1934 when 388 passenger-train cars were ordered. On December 1 inquiries were outstanding for 36 passenger-train cars.

Last month's rail orders for 277,472 tons brought this year's total to 940,294 tons, which exceeds the total of any entire year since 1929 when orders for 1,776,260 tons were reported. Last year 495,300 tons were ordered.

It is unfortunate that when the improvement in business has acquired such momentum as to indicate that unless interrupted by new influences it will continue until prosperity and employment are fully restored, there should be much agitation for government policies based upon the assumption that further government interference with business is needed to restore employment. The American Federation of Labor has recently reiterated its declaration in favor of legislation to establish a 30-hour working week. The railway labor unions are continuing their campaign for legislation to establish a 6-hour working day at 8 hours' pay.

Demands for Harmful Labor Legislation

There are two important industries that are lagging the complete restoration of whose activity probably would directly and indirectly restore full employment to all the employable workers of the country. These are manufacturing for railways and building. Although a large increase in railway buying from the manufacturing industry has occurred this year, it is still less than 50 per cent as large as in 1929. The volume of building being done is also still only about half as large as in 1929. Nothing more effective to stop railway buying could be done than to pass the legislation for a 6-hour day at 8 hours' pay being demanded by the railway labor unions. Likewise nothing more effective could be done to arrest the increase of building occurring than to increase the cost of building as would be done by the 30-hour week legislation being advocated by the American Federation of Labor. In brief, nothing more effective to retard or arrest improvement in business and increase of employment could be done than to pass such legislation as is being demanded by organized labor.

Fortunately it is by no means certain that even the legislation for establishing a 6-hour day at 8 hours' pay on the railways would be held constitutional by the United States Supreme Court. It did uphold the Adamson Act to establish an 8-hour day at 10 hours' pay in train service. But a careful reading of its opinion in the Adamson case shows that the court took judicial notice of the fact that the country was in imminent danger of becoming involved in war; that the threat of a nationwide railway strike, therefore, created a grave emergency; and that it held that the legislation was justifiable as a means of preventing a strike in the emergency situation existing. It is far from certain that it would uphold legislation to establish a 6-hour railway working day at 8 hours' pay as constitutional regulation of interstate commerce when no emergency existed. If it would not uphold the application of such legislation to the railways it certainly would not hold its application to other industries a constitutional regulation of interstate commerce.

Labor Legislation Threatens Job Curtailment

Today railroad rates are a problem not so much of what the Commission will permit carriers to charge as the bid they must make to attract or hold traffic. The business can leak away to other transport agencies, and when it does railroad employment leaks away with it. Making jobs for unemployed rail workers by shortening the work day while sharply raising the hourly wage rates can only strengthen the competing transport agencies—and that means favoring the men on highway trucks and buses, inland and coastal vessels and air liners, who inevitably compete with railroad men for employment.

Perhaps the rail union executives calculate that the railroads could meet the estimated jump of $350,000,000 in annual payrolls out of their present and prospective net operating earnings, and are not greatly concerned whether more or fewer of them would then be solvent enterprises. If so, they overlook the vitally important fact that railroad companies need both profits and borrowing credit to equip themselves for the competitive struggle for traffic, in which they must have measurable success permanently to increase the number of railroad employes. A six-hour statute would doubtless exert its initial effect in a substantial addition to the railroad roster. Its longer-term consequences would include (1) newly added pressure of necessity upon railroad management to get along with the minimum of labor and to abandon branch mileage unable to support operation on the higher cost level, and (2) a severe handicap upon the railroad in its effort to make rate or service bids for traffic. There would be numerous secondary consequences. The higher the cost of long-distance freight transportation the more intense must be the economic pressure for decentralization of industry; which, whatever its incidental social advantages might prove to be, would certainly make for less railroad employment.

In a comparative sense, railroad labor ensconced itself on a wage plateau during the depression years. That fact had a causal relation to the decline in the number of railroad employes from an average of 1,660,850 for 1929 to 971,196 for 1933. Keeping their services dear did not prevent their unemployment then; making them dearer will not cure unemployment now.

—From an Editorial in the Wall Street Journal.

A Renaissance of Railroading*

Continued increase of net operating income essential to enable carriers to consummate great improvements in service begun—Threats of inimical legislation

By Samuel O. Dunn,
Chairman, Simmons-Boardman Publishing Corporation

SAN FRANCISCO, CALIF.

THERE has begun a veritable renaissance of railroading. In five years of depression air-conditioning has been introduced and applied to a large part of all our passenger cars. A few years ago it took not less than 72 hours to travel by rail between San Francisco and Chicago. The trip can now be made in 40 hours, and speeds of passenger trains have been correspondingly increased for short and long distances in all parts of the country.

Inventive genius and private enterprise have provided lighter metals which are making possible the revolutionizing of both railroad structures and equipment. Within less than four years the Diesel locomotive has been developed and brought into wide-spread use for fast railroad transportation and meantime greatly improved steam locomotives have been put in service. Sleeping cars and day coaches are undergoing great changes besides air-conditioning to make travel more comfortable and luxurious. The speed and dependability of railway freight service have been greatly increased.

These and other developments occurring constitute only the beginning of the renaissance which is possible and which railroad managements desire to accomplish. During the depression many thousands more locomotives and freight and passenger cars have been worn out and destroyed than acquired. There is a golden opportunity to so replace them as well as other facilities as to enable the railways to adapt their service to all the demands and requirements of changed and changing conditions.

Increase of Net Operating Income Vital

But government and public must constantly be reminded that what will be accomplished will and can be only partly determined by railway managements. The replacement of old with new and better facilities on the grand scale needed cannot be achieved without huge railway purchases from the manufacturing industry. Now, it is easily demonstrable by the unbroken experience of many years that the volume of railway purchases that is and can be made from the manufacturers is determined by railway net operating income—i.e., the part of earnings left after paying operating expenses and taxes. If the railroad renaissance is fully to develop the railways must have a large increase in their net operating income, which is still less than one-half as large as before the depression. The net operating income earned will be determined by several different important influences. If we could feel sure it would be determined by the same influences as following past depressions, future developments on the railroads could be predicted with confidence. But there is more uncertainty than ever before as respects one very important matter—viz., the government policies that may be applied to business in general and to transportation in particular. The net operating income of the railways and, therefore, whether the renaissance in railroading will continue, will be determined by—

What Will Determine Net Operating Income?

(1) The efficiency of management. What has been accomplished within recent years, in spite of depression conditions, leaves no reason to doubt that, given equal opportunity, this will be as great as in any other American industry.

(2) The trend of general business. Railways derive their gross earnings principally from freight traffic the volume of which depends mainly on the amount of commodities produced and distributed by other industries. How much general business will improve in the years immediately ahead will be determined more than following any past depression by government economic policies. Assuming sound government policies, there seems probable during the next five years, one of the greatest expansions of production and national income in history.

(3) Railway net operating income will be largely determined by the government policies applied to the competitors of the railways.

(4) It will also be largely determined by the government policies applied specifically to the railways themselves. For example, will Congress pass the legislation being sought by the railway labor unions to establish a 6-hour working day at 8 hours' pay and thereby greatly increase operating expenses?

First, then, what may we anticipate will be the trend of general business during, let us say, the next five years?

There are students of economics uninfluenced by politics who believe, and I am one of them, first, that this depression was largely caused by economically unsound policies followed by both government and business following the Great War; second, that throughout the depression there has been a constant conflict between the natural forces of recovery that pulled us out of previous depressions and certain government and business policies; third, that such recovery as has occurred has been in spite of these policies; and, fourth, that renewal of certain government policies would again retard or arrest recovery. Neither time nor your patience will permit even enumeration, much less discussion, of all the policies of both the Old Deal and the New Deal referred to.

The "Purchasing Power" Theory

But there has been and still is prevalent one economic theory which demands more discussion than it heretofore has been given because of the past and possible future importance of its application in practice. This is the "purchasing power" theory—that the way to restore and maintain prosperity is to so redistribute the national income that the working class will both immediately and permanently get a larger part of that in-

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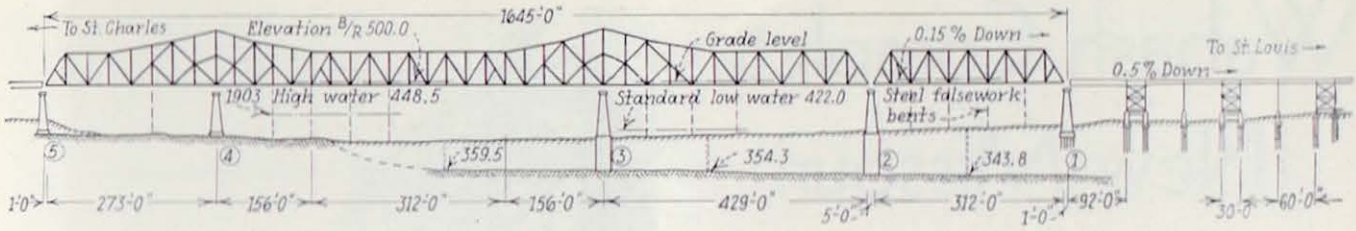
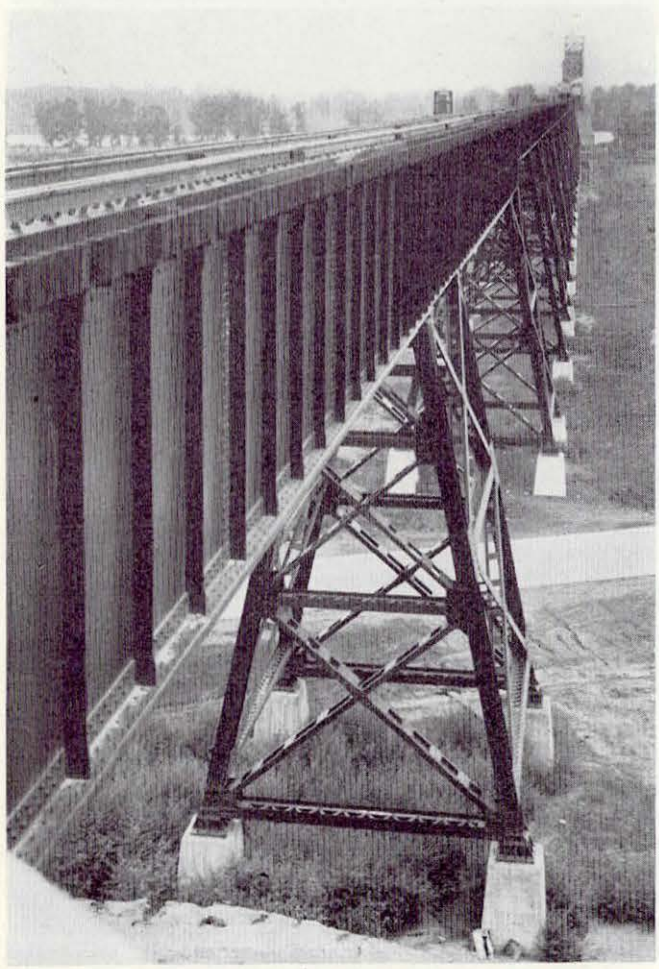


Outline Elevation of the River Structure

structure that is distinctive by reason of the marked difference in the length of the anchor arms, 274 ft. and 431 ft. 3 in., respectively. A fourth span of the simple span type is of the same length, center to center, of end panel points, 312 ft., as the suspended span of the cantilever structure. These four spans, comprising the river structure, have a total length of 1,645 ft. center to center of piers. The superstructure provides a clear headroom of 45.5 ft. above the high water level of 1903, which was 26.5 ft. above standard low water.

The river structure is flanked by long viaduct approaches at each end, that on the east extending for 3945.06 ft. on a descending 0.5 per grade to the end of a long embankment across the low bottom lands, while that on the west end continues on a level grade for 2286.6 ft., to the end of an embankment that carries the line into support on the bluff. The bridge carries a single track.

Work was started on the bridge in October, 1930, but financial difficulties brought on by the depression led to the suspension of operations in May, 1931, at which time the five river piers and a considerable yardage of approach grading had been completed. No further work was done until 1934 when funds were made available through a federal loan of $2,350,000 approved by the administrator of public works.



The West Approach Viaduct

The River Spans

The superstructure of the river bridge has a maximum height of 92 ft., while the distance center to center of the parallel chords is 53 ft. 8 in. The trusses are 25 ft. center to center. The panel lengths range from 31 ft. 2⅜ in. for the simple and suspended spans, to 34 ft. 1½ in. and 35 ft. 9 in., for the short and long anchor arms, respectively.

Silicon steel was used in floor beams and stringers and in the principal truss members, except for the eye-bars which are of heat-treated high-carbon steel. The use of eye-bars is confined to the top chords for several panels on each side of the main piers of the cantilever structure, the suspended span hangers and a few other members. The stiff chord members are of the box type, and in all except the lighter chords cover plates provided with a succession of manholes have been substituted for lacing bars. The only diaphragm-type members are the tall posts over the main piers, these also being provided with the manhole cover plates on both sides. The bottom laterals are of 12-in. H-sections, and because of the uplift obtained at the ends of the anchor arms under certain conditions of loading, the lateral shear at the anchor piers is transmitted to the bridge seats through wind anchors placed midway between the bridge bearings. In these, a tongue member projecting downward from the end of the lateral system engages a cast steel trough anchored to the top of the pier, this trough having phosphur-bronze sides equipped with Alemite lubricators so that the tongue is free to slide longitudinally with changes in the length of the superstructure.

In the construction of the piers, which were built for double track, anchor rods were provided to take the uplift at the ends of the anchor arms. These rods, four in each corner (3½ in. in diameter for the short arm, and 2½ in. for the long arm), were positioned to come inside the bearing shoes.

The piers are of concrete, except that Piers 2, 3 and 4 have a facing of Indiana limestone to the tops of the starlings, while the surfaces above that level are broken by rustications.

Viaduct Details

The viaducts depart from the conventional in the introduction of a rocker bent between every two towers so that there are two long spans instead of one between the towers. The tower spans are 30 ft. long and the intermediate spans 60 ft., except at the ends or at intermediate points where the crossing of highways or streets and a crossing of the Missouri-Kansas-Texas demanded spans up to 105.5 ft. in length. Girders 72 ft. or less in length are all of the same depth, about 6 ft. The longer girders have a depth of about 10 ft. and where they are supported on a tower, the tower span girders were built to the same depth, as this arrangement simplifies the tower details and gives a much more pleasing appearance. The adjoining shallow girders are

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There are students of economics uninfluenced by politics who believe, and I am one of them, first, that this depression was largely caused by economically unsound policies followed by both government and business following the Great War; second, that throughout the depression there has been a constant conflict between the natural forces of recovery that pulled us out of previous depressions and certain government and business policies; third, that such recovery as has occurred has been in spite of these policies; and, fourth, that renewal of certain government policies would again retard or arrest recovery. Neither time nor your patience will permit even enumeration, much less discussion, of all the policies of both the Old Deal and the New Deal referred to.

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come and thereby be enabled largely to increase its purchases. This was the main principle underlying the reductions of working hours and advances in hourly wages made by N.R.A. It is the main economic theory underlying current demands for further legislation to reduce working hours and increase hourly wages in industry and on the railroads. It raises some of the most practical and vital questions confronting the people of the United States.

Every intelligent and humane person wants the income and purchasing power of the masses increased. Their increase must be the principal effect and cause of any sustained increase of national prosperity. Increase in the incomes and advances in the living standards of all people with small incomes should be the main ultimative objective of all business policies and government economic policies. But it may be very easy to state a desirable and important objective, and far more difficult to devise and execute the only effective means of attaining it; and how best to increase the incomes and thereby advance the living standards of the masses of any country is a much less simple problem than is believed by those who would accomplish it by the mere expedient of immediate large reductions of working hours and advances in hourly wages in addition to those made within the past three years.

The Railroad Case—An Illustration

This can be as well illustrated as in any way by the case of the railroads. In the year 1936 they are directly employing about 1,100,000 persons and paying them about $1,900,000,000 in wages. But these are not the only persons to whom they are actually affording employment and purchasing power. They are making purchases from the manufacturing industry of about $700,000,000 and also, of course, large purchases of fuel. Now, these facts, and especially the purchases from the manufacturing industry, emphasize a point of the greatest importance—viz. that business as well as individuals makes purchases, and that, if on a mistaken purchasing power theory, you adopt a policy that reduces the purchasing power of an industry more than it increases the purchasing power of that industry's employees, you will make, not an increase, but a reduction in the total purchasing power of the nation.

Is it possible to do this? It is not only easily possible. It has often been done, and there is danger that it may be done again in the near future. Reverting to the case of the railroads, when they make a dollar of gross earnings, pay it to a locomotive engineer for helping run a train and charge it to operating expenses it contributes exactly a dollar toward that employee's and the nation's purchasing power. But when they make a dollar of net operating income they can use it to pay a return at an annual rate of 5 per cent on $20; and if they borrow that $20 and apply it on buying a needed locomotive, the use made of that dollar will immediately contribute twenty times as much toward increasing the nation's purchasing power as the dollar paid to the locomotive engineer and charged to operating expenses. And who will actually get the $20? Almost all of it will be added indirectly to the purchasing power of the masses in wages paid to those employed in producing the raw materials and making and assembling the finished parts for the locomotive. One of our large manufacturers has shown that every time it builds a locomotive it directly and indirectly employs labor in 32 states.

Consumers' Goods and Durable Goods

This illustration calls attention, of course, to the distinction between consumers' goods and those who buy them, on the one hand, and durable goods and those who buy them, on the other hand—an extremely important distinction familiar to economists, but little known and less understood by most persons. The locomotive engineer uses his dollar of wages to buy $1.00 worth of consumable goods. The railroad may use its dollar of net operating income as a basis for credit to raise $20 with which to buy durable goods. Now, obviously if you advance the wages of railway employees at any given time so much as unduly to curtail the net operating income of the railways you will reduce the national purchasing power by reducing the purchasing power of the railroads more than you increase the purchasing power of their employees.

The same economic principle is applicable to every industry that buys durable goods. If by unduly increasing labor costs at any given time you curtail the profits of any or many industries unduly you will thereby at least temporarily curtail the buying of durable goods, because in all industries, as in the railroad industry, profits afford the basis for the credit used in buying durable goods; and, excepting automobiles, nine-tenths of all the things classed as durable goods are bought by business itself.

Are these facts important in their bearing upon the purchasing power theory? In 1929 the total production of consumers' goods in this country was $30,000,000,000 and the total production of durable goods was $26,000,000,000. It is well known that the decline in the production of durable goods was much greater and caused much more unemployment than the decline in the production of consumers' goods. Therefore, the main thing that has been needed to end the depression has been to restore production and employment in the durable goods industries; and it is still the main thing needed. Improvement in these industries undoubtedly was hindered by the premature advances in hourly wages made by N.R.A. The acceleration of their revival since the destruction of N.R.A. has been the principal cause of the improvement in general business that has since occurred. And the most serious threat to the continued recovery of business is the movement immediately to further reduce working hours and advance hourly wages. Without advances in their prices and rates it would curtail the profits of large industries that have not fully recovered their earning capacity and credit, and thereby curtail their purchases of durable goods. This is a matter of vital importance to the railroads because whatever curtails the production of durable goods will necessarily restrict and retard the increase of their traffic.

Railways and Their Competitors

And how about government policies applied or that may be applied to transportation in particular? Will the railways be able to get their full fair share of any increase in freight traffic, small or large, that does occur? The competitors of the railways are subsidized by government. The railways are not. The railways cannot get their fair share of any increase in traffic that occurs as long as this difference in government policies exists. The railways are strictly and comprehensively regulated. Some of their competitors are less regulated, some not at all. I advocated all the regulation applied to the railways as a monopolistic industry up to 1906 when the Interstate Commerce Commission was empowered to change any rates found unfairly discriminatory or excessive. They are as far today from being a monopoly as any industry in this country. Therefore, in fairness and the public interest they should be freed from virtually all the regulation applied to them since 1906, and all such regulation as may continue to be applied to

them should be applied to all their competitors. This would restore the initiative in rate making to all carriers and make competition in transportation equal, while leaving the Commission authority to prevent unfair discriminations.

Why should not this be done? Why, for example, should the railroads be left subject to the long-and- short haul section of the Interstate Commerce Act when no such restrictive regulation is applied or proposed to be applied to any of their competitors? The Pettengill bill to repeal the long-and-short-haul clause was passed by the House at its last session by an overwhelming majority. Its passage by the Senate was prevented solely by a one-man filibuster conducted by Senator Wheeler, chairman of the Senate Committee on Interstate Commerce, who represents the inter-mountain state of Montana. The original assumption of business interests in the inter-mountain territory was that the railways would have to make rates competitive with the steamship companies to the Pacific Coast anyway, and that a law forbidding them to make lower rates for a longer than for a shorter haul finally would force them to reduce their rates to the inter-mountain territory. Experience has refuted this. They could not afford to make rates to meet steamship competition on the Pacific Coast if this would necessitate reductions to the inter-mountain territory where no such competition existed. In consequence the attitude of inter-mountain business interests has prevented the railways from making competitive rates to the Coast and prevented them from getting such traffic as they could have by making such rates, while at the same time it has gained nothing for the inter-mountain states.

It is obviously unfair and economically unsound to apply policies of regulation to the railways that are not applied to their competitors and one important requisite to restoration of railroad earning capacity is equalization of regulation.

Proposed Six-Hour Day Legislation

Now, with respect to legislation proposed to be applied specifically to the railways themselves. The most important is that demanded by the railway labor unions to establish a working day of 6 hours at 8 hours' pay. Assuming this would increase the number of employees as claimed by its advocates it would increase operating expenses approximately $650,000,000 a year. Plainly, no such legislation greatly increasing operating expenses should be applied to the railways without being applied to competing carriers. Without an advance in rates it would bankrupt the railroads. It would demand an advance in rates which the railways alone could not make without losing so much of their traffic to their competitors that it would bankrupt practically all of them anyway. If the operating expenses of all carriers were increased by 6-hour day legislation applied to them all they might all be able to recoup themselves by all advancing their rates. But is the public willing and prepared to pay a huge advance in rates to defray the cost of an advance of 33⅓ per cent or more in the hourly wages of employees of all transportation agencies, when although we have not recovered from the depression, the wages of railway employees already are the highest in history? Surely, such legislation should not be applied to transportation unless also to all other industries, including agriculture. Why should employees of transportation and industry expect much more pay for much less work than, for example, farmers and their employees?

Consideration of working hours and wages in industry raises some questions affecting the purchasing power theory already mentioned that apparently never have occurred to most persons. What is industry? The word as almost invariably now used means only transportation and communication, manufacturing, mining and construction. But only 40 per cent of the nation's gainfully employed persons are employed in these industries. Another 40 per cent live on farms and in rural communities of less than 2,500 population that are practically part of the farms. The remaining 20 per cent are professional men and their employees, large and small merchants and their employees, domestic servants and so on. If we are to have a well-balanced and prosperous economy the 60 per cent that are not employed in what is called "industry" must be able to buy roughly 60 per cent of the products and service of industry and transportation.

It has been shown by the Brookings Institution that considering all factors in 1929 the average income of the 6,000,000 farm families in this country was only $1,240, as compared with $3,226 for non-farm families. Now, if it ever has been proposed to establish a 6-hour working day at 8 hours' pay, or the equivalent thereof, for the 60 per cent not employed in industry, including farmers and farm workers, I have not heard of it. How, then, about the purchasing power of this 60 per cent? An advance of 33 per cent or more in the average hourly wage in industry and transportation would necessitate advances in prices and rates which would have to be paid not only by the 40 per cent employed in industry and transportation but also by the 60 per cent not employed in them. If there is not to be an increase in the purchasing power of this 60 per cent how are they going to be able to pay increased prices and rates for industrial products and transportation and at the same time buy as much of them as now? If they are not able to buy as much of them as now there will be a reduction in the demand for industrial products and transportation and consequently no such increases of employment, if any at all, in industry and transportation as the reductions of working hours and advances of hourly wages advocated are intended to cause.

Reduced Working Hours and Production

Suppose, however, that there should also be established by law a 6-hour working day at 8 hours pay or its equivalent for the 60 per cent not employed by industry and transportation. The higher average hourly wages received by everybody would then be offset by higher prices and rates that everybody would have to pay and nobody would gain anything but more leisure. But everybody would lose something. It would be impossible for the gainfully employed as a whole to produce as much working six hours as eight hours until there had occurred great technological improvements that would increase the output of all commodities and services at least 33⅓ per cent per hour worked by each person.

Such technological advance would require an enormous increase in the production of durable goods, because it is by means of improvements in machinery and other kinds of durable goods that technological progress is made. But such a revolutionary change as the general and immediate establishment of a 6-hour day at 8 hours pay would greatly curtail the profits of industry and its power to buy durable goods. The result would be for years to come a much smaller production of goods and services than otherwise would occur and a consequent curtailment of the national income, and especially of the incomes of the masses.

The most important and fundamental economic truth we need to realize, and that a surprisingly small number seem to realize, is that *production* is the source of all

wealth and income; that the volume of production determines the total amount of real income that can be divided between all of us; and that, therefore, the objective of every business policy and every government economic policy should be increase of production.

A Prediction Made Fifty Years Ago

Some say we already have had such technological development that if we make as much progress in future as in the past in increasing means of production we shall cause and perpetuate unemployment. Such views have been expressed during every depression within the last one hundred years. Let me quote to you what was once said:

"What is strictly necessary has been done oftentimes to superfluity, but it will not leave room for a marked extension, such as has been witnessed during the last fifty years, or afford a remunerative employment of the vast amount of capital which has been created during that period. (Of course, whatever conditions will not afford remunerative employment for capital will not afford remunerative employment for labor). The market prices of products will continue low, no matter what the cost of production may be. The day of large profits is past. There may be room for further intensive but not extensive development of industries in the present era of civilization."

What I have just read is a verbatim quotation from the report on industrial depressions written by Carroll D. Wright, Commissioner of Labor of the United States in 1886. Within less than a half century after that was written there occurred the greatest extensive development of industries in the history of the world and the freight traffic of our railways in consequence increased 500 per cent. While I am quoting let me quote you something else which is apropos now. Twenty-five years ago George H. Hull wrote a book reviewing all the depressions that had occurred in the world in the previous century. He concluded that the principal cause of all of them had been decline in the production of durable goods and that their termination had been principally due to revival in the production of such goods. He added, "The predominating motive which stimulates man's acts in originating, operating, and enlarging the constructive enterprises is the instinctive desire for gain. * * * It is this motive which prompts the erection of the great blocks of residences and the apartment and tenement houses in the large cities; the stores, factories, and mills in the cities, towns and villages; the railroads, pipe-lines, telegraph-lines, ships, and submarine cables wherever they are constructed. * * * The industries are an aggregation of individual business acts performed by men who have in view the problems of adding to their wealth. They move cautiously as long as the future looks uncertain, but when the business outlook is clear, and they see prospects of making construction investments which promise steady profits as well as security to their capital, they act promptly and with vigor. * * * The motive which underlies the industries of a nation is a plain, simple, uncomplicated business consideration."

Possibility of Unprecedented Prosperity

The progress made by free private enterprise in the "extensive development of industries" will be as great during the half century ahead of us as it was in the half century after Mr. Wright made his pessimistic prediction if private enterprise is given as much opportunity as it was during the last half century.

There never has been such an enormous potential demand for products, and especially for durable goods, as there is in this country now. There is available ample capital to finance an enormous increase of production. There are two large durable goods industries in this country the volume of business being done by which is still only about 50 per cent of what it was in 1929. These are construction and manufacturing for railways. Total construction in 1929 was about $13,000,000,000 and this year is only about $6,500,000,000. Total manufacturing for railways in 1929 was $1,400,000,000 and this year, in spite of the increase occurring, will be only about $700,000,000. Full restoration of activity in these industries alone would increase business by $7,200,000,000 annually and give employment directly to almost 5,000,000 persons and indirectly to many more.

But restoration of full activity in these industries is dependent upon restoration of the ability of those who must be relied upon to increase construction and railway buying to raise capital for these purposes and upon increase of their confidence that investments made by them will be safe and profitable. If we adopt sound business and government economic policies the existing enormous potential demand for products will become effective and in causing an enormous increase of production will afford employment to every employable worker. In fact, I confidently predict that, because of reductions in hours of work made since 1929, we will have a general shortage of labor in this country before we can even restore total production to the volume of 1929 unless we actually increase hours of work. The increase of production easily practicable will afford to business sufficient earnings and profits not only to employ every employable worker, but gradually and steadily to advance wages. There is no purely economic reason why we should not have an expansion of production, and national income which would soon double the income of every person in this country now receiving less than $2,500 a year.

Railway Recovery and Prospects

Large increases in the incomes of our farmers and working people actually have occurred in the past and can as easily be accomplished again. But to accomplish them again we must discard fallacious economic theories and begin acting again in accordance with the most fundamental of all economic principles—that production is the only source of wealth and that only by adhering to government and business policies helpful to increasing production can we achieve and maintain the greatest practicable prosperity for all of us.

I assume that the bearing of what I have said about these broader economic issues upon the railroad problem is plain. If we do what is necessary to cause the maximum practicable production there will be a great increase in the volume of goods available for transportation. If we treat the railways and other carriers equally the railways will get their fair share of an abundant traffic. If the traffic of the railways largely increases and we do not unduly burden them with increases in operating expenses and taxes imposed in accordance with unsound economic theories, they will greatly increase their employment, recover their earning capacity and make the vast expenditures for improvements in their properties and services needed in the public interest. If, on the other hand, we allow to prevail in government and business the false economic theories to which widespread acceptance has been given because of the distress of depression, the outcome for business, the railroads, the entire people and especially the masses will inevitably be very unhappy.

The average hourly wage of railroad employees is now the highest in history. Increased taxes have been im-

(Continued on page 837)

Wabash Completes New Missouri River Crossing at St. Charles

Structure built to retire old bridge and grade revision on approaches afford improved service west of St. Louis

River Spans of the New Bridge

TRAIN movements on the Wabash over its lines between St. Louis, Mo., and Kansas City, Omaha, Neb., and Des Moines, Iowa, have been expedited materially by the completion on October 29 of a new bridge over the Missouri river at St. Charles, Mo., together with grade and line revisions on the approaches extending over a distance of seven miles. This project, which involved an expenditure of 3¼ million dollars, was undertaken for the purpose of retiring the old St. Charles bridge. Built between 1868 and 1871 and extensively rebuilt in the early eighties, the old crossing had long imposed serious restrictions on the economical handling of traffic in spite of repeated measures for reinforcing the river spans and the approach viaducts. The improvement effected by the completion of the new bridge is indicated by the fact that locomotives now being operated over it have a tonnage rating 50 per cent greater than that of the heaviest engines permitted on the old structure. Furthermore, the line revision has resulted in a reduction in ruling grade from 1 per cent to 0.5 per cent, a saving of ⅔ of a mile in distance, a decrease of 47 ft. in rise and fall and a reduction in curvature amounting to 234 deg. of central angle.

On a New Location

St. Charles is built against a bluff on the west side of the Missouri at a point where the river flows to a generally northerly direction close to the base of this bluff. The old bridge was so located that the west approach viaduct carried the line over the business section of the city to a point where the rising bluff side provided natural support. The river is separated from the hills on the east side by a stretch of bottom lands a mile or more in width, thus requiring a long viaduct on a one per cent descending grade to a point where an embankment became more economical than the structure.

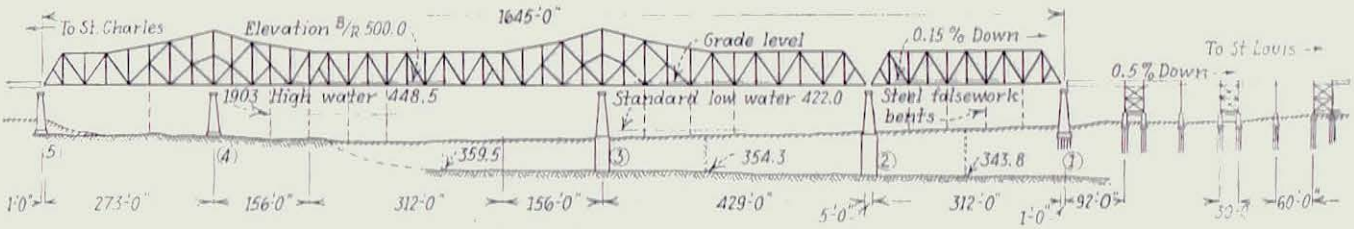
The site selected for the new crossing, about one-half mile north of the old one, possesses the advantage of placing the west approach substantially outside of the town and thus simplified the problem of right of way. However, on the east side of the river, the situation is comparable with that at the old crossing in that it demanded a long approach supported on embankment and viaduct.

It would have been possible to connect this approach with the old line near the base of the hills on the east side of the river valley, but this would have entailed the perpetuation of a long one-per-cent grade, with heavy curvature, ascending to a summit in the vicinity of Robertson (Lambert-St. Louis air port). Accordingly, it was decided to continue the new east approach line to that point with maximum grades of 0.5 per cent, compensated. The grade ascending eastward is joined with the bridge approach grade ascending westward by a vertical curve in the embankment across the river bottom east of the east viaduct.

The work on this new line was heavy, involving two cuts of 630,000 and 450,000 cu. yd. respectively, and a total of 1,650,000 cu. yd. for the entire line. Two highway grade separations, together with a new station and a water supply plant at St. Charles were also required.

Longer Spans

As in the case of other railways that have sought authority to replace older structures over large rivers in recent years, the Wabash was compelled to provide a new bridge embodying span lengths that bear no relation to the spans of the bridge to be abandoned. Whereas the longest span in the old bridge is 321 ft., the new structure embraces a channel span of 600 ft., clear width, or 624 ft., center to center of piers. This span comprises the central unit of a three-span cantilever

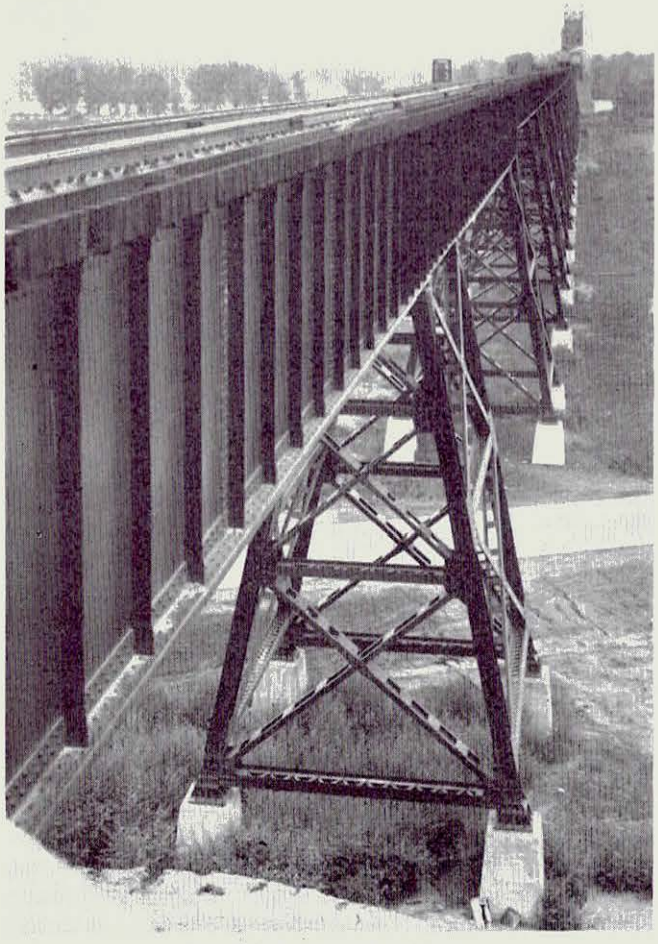


Outline Elevation of the River Structure

structure that is distinctive by reason of the marked difference in the length of the anchor arms, 274 ft. and 431 ft. 3 in., respectively. A fourth span of the simple span type is of the same length, center to center, of end panel points, 312 ft., as the suspended span of the cantilever structure. These four spans, comprising the river structure, have a total length of 1,645 ft. center to center of piers. The superstructure provides a clear headroom of 45.5 ft. above the high water level of 1903, which was 26.5 ft. above standard low water.

The river structure is flanked by long viaduct approaches at each end, that on the east extending for 3945.06 ft. on a descending 0.5 per grade to the end of a long embankment across the low bottom lands, while that on the west end continues on a level grade for 2286.6 ft., to the end of an embankment that carries the line into support on the bluff. The bridge carries a single track.

Work was started on the bridge in October, 1930, but financial difficulties brought on by the depression led to the suspension of operations in May, 1931, at which time the five river piers and a considerable yardage of approach grading had been completed. No further work was done until 1934 when funds were made available through a federal loan of $2,350,000 approved by the administrator of public works.



The West Approach Viaduct

The River Spans

The superstructure of the river bridge has a maximum height of 92 ft., while the distance center to center of the parallel chords is 53 ft. 8 in. The trusses are 25 ft. center to center. The panel lengths range from 31 ft. 2⅜ in. for the simple and suspended spans, to 34 ft. 1½ in. and 35 ft. 9 in., for the short and long anchor arms, respectively.

Silicon steel was used in floor beams and stringers and in the principal truss members, except for the eye-bars which are of heat-treated high-carbon steel. The use of eye-bars is confined to the top chords for several panels on each side of the main piers of the cantilever structure, the suspended span hangers and a few other members. The stiff chord members are of the box type, and in all except the lighter chords cover plates provided with a succession of manholes have been substituted for lacing bars. The only diaphragm-type members are the tall posts over the main piers, these also being provided with the manhole cover plates on both sides. The bottom laterals are of 12-in. H-sections, and because of the uplift obtained at the ends of the anchor arms under certain conditions of loading, the lateral shear at the anchor piers is transmitted to the bridge seats through wind anchors placed midway between the bridge bearings. In these, a tongue member projecting downward from the end of the lateral system engages a cast steel trough anchored to the top of the pier, this trough having phosphur-bronze sides equipped with Alemite lubricators so that the tongue is free to slide longitudinally with changes in the length of the superstructure.

In the construction of the piers, which were built for double track, anchor rods were provided to take the uplift at the ends of the anchor arms. These rods, four in each corner (3½ in. in diameter for the short arm, and 2½ in. for the long arm), were positioned to come inside the bearing shoes.

The piers are of concrete, except that Piers 2, 3 and 4 have a facing of Indiana limestone to the tops of the starlings, while the surfaces above that level are broken by rustications.

Viaduct Details

The viaducts depart from the conventional in the introduction of a rocker bent between every two towers so that there are two long spans instead of one between the towers. The tower spans are 30 ft. long and the intermediate spans 60 ft., except at the ends or at intermediate points where the crossing of highways or streets and a crossing of the Missouri-Kansas-Texas demanded spans up to 105.5 ft. in length. Girders 72 ft. or less in length are all of the same depth, about 6 ft. The longer girders have a depth of about 10 ft. and where they are supported on a tower, the tower span girders were built to the same depth, as this arrangement simplifies the tower details and gives a much more pleasing appearance. The adjoining shallow girders are

provided with brackets to increase the end depth to 10 ft.

The distinctive feature of the towers and rocker bents is the use of H-column sections for the posts. These are 21-in. by 13-in., 112-lb. sections in most cases, but sections up to 24-in. by 12-in., 130-lb. were used in the bents supporting the longer girders. The term rocker bents is really a misnomer since the bents are designed for flexure on the assumption of a fixed support on the pedestals.

With a few exceptions, the expansion bearings are confined to the end of one girder span supported on each of the rocker bents, this bearing involving the use of a phosphur-bronze plate, as shown in the illustration. These are lubricated with grease through a tube provided with an Alemite gun connection at the bridge floor level.

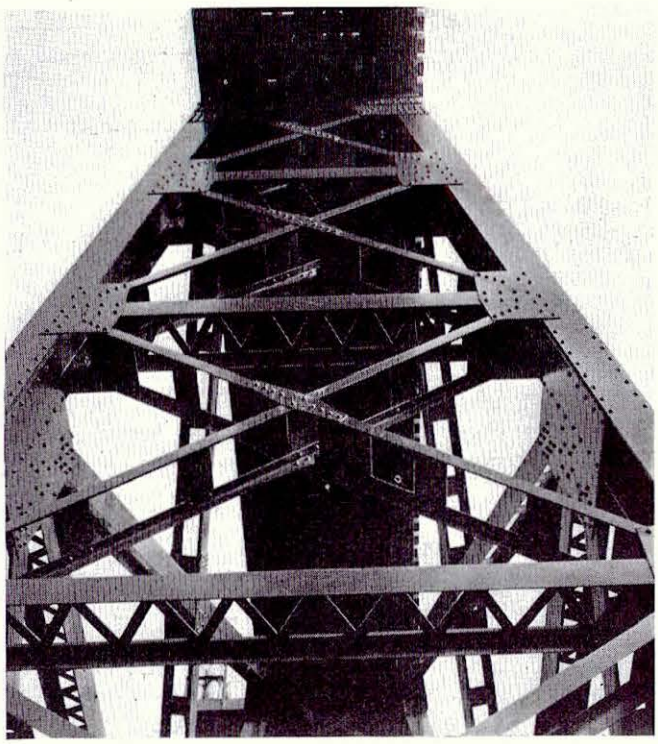
The steel work was designed according to specifications modeled after those of the American Railway Engineering Association, but differing as to certain features. The live load, for example, embraced a 4-8-4 locomotive with a six-axle tender and having 75,000 lb. on the driving axles, with a total weight of 802,000 lb., the approximate Cooper equivalent being E 75. Members were proportioned for a basic unit stress of 18,000 lb. per square inch in carbon steel and 24,000 lb. in silicon steel.

The tower girders have no cover plates, while cover plates on the top flanges of other girders were all made full length to the end that a uniform support was provided for the ties. As a result the ties are dapped only for rivet heads and this was reduced to a minimum by the unusual expedient of confining the cover-plate rivets to only two gage lines. Hook bolts through every alternate tie and 4-in. by 8-in. guard timbers that are not dapped, secure the deck to the girders. The ties are spaced by wood blocks inserted between them and having beveled tops so that they also serve the added function of protecting the top flanges from brine drippings.

Track Anchored to Structure

An ingenious scheme has been devised to anchor the rails to the structure, this anchorage being introduced over the towers, or halfway between girder expansion bearings. As shown in the sketch, three of the spacer blocks have been replaced by short pieces of 4-in. car channels that were welded to the top flanges of the girders, thus effectively preventing the adjacent ties from moving in either direction, while each rail is anchored to these ties by 10 Fair rail anchors.

A similar plan has been carried out on the river spans, except that the anchors are applied to all stringers, while rail expansion devices are provided in the track over the expansion bearings of the spans. The track is laid with 112-lb. rail, which is used also for the guard rails, and the running rails are set on large double-shoulder tie plates with screw spikes to hold down the plates and cut spikes to hold the rail.

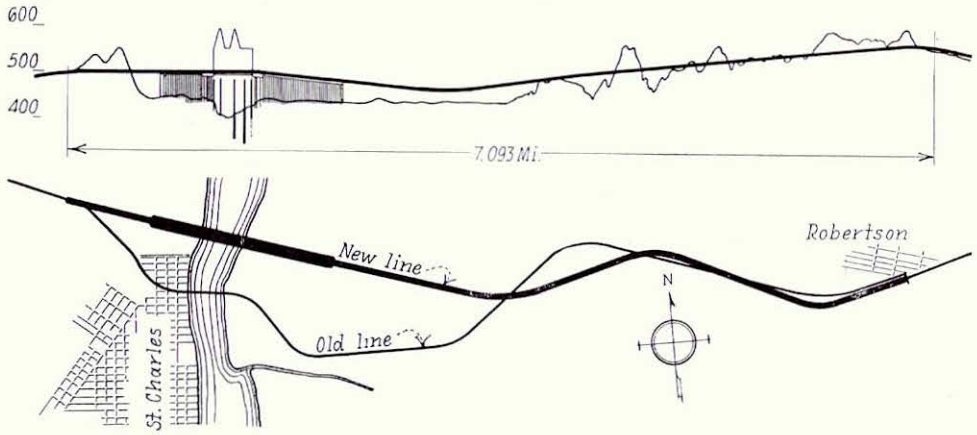


Use of H-Column Sections, and Split Beams for Bracing Reduced the Riveting in the Towers

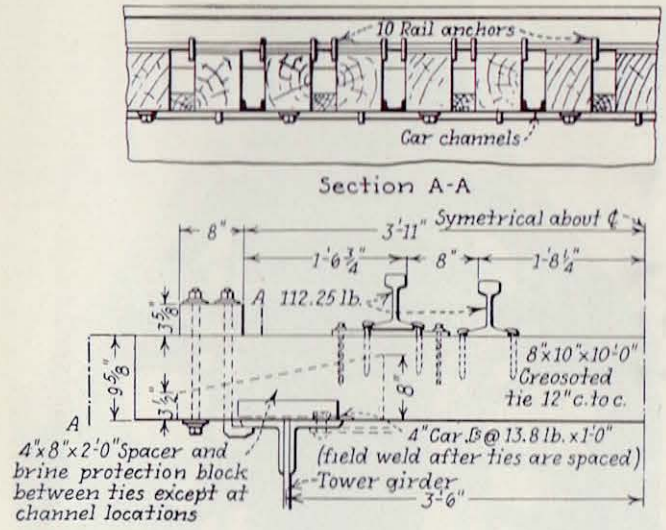
Foundation Problems

The surface of bedrock at the site of the river crossing has a marked dip from west to east, lying but 5 ft. below standard low water at Pier 5 and only slightly lower at Pier 4, but ranging from 65 ft. to 81 ft. below low water at the three easterly piers. As a result, three different foundation procedures were employed. Piers 4 and 5 were readily founded on rock by excavation in open coffer dams, but to carry Piers 2 and 3 to rock required the application of the pneumatic process, while Pier 1 was supported on reinforced concrete piles. As a matter of fact, the driving of these piles presented the most formidable feature of the substructure work on the river structure. A bed of boulders, the location of which had not been disclosed by the test borings, precluded the driving of the piles to the depth originally contemplated, with the result that 25-ft. piles had to be substituted for the 40-ft. piles ordered.

Creosoted wood piles from 40 to 50 ft. long were used under the east approach pedestals, except for the



Sketch Profile and Alinement Map of the Bridge Line Relocation



Details of the Approach Viaduct Floor, Showing Method of Anchoring the Rails at the Middle of the Tower Girder Spans

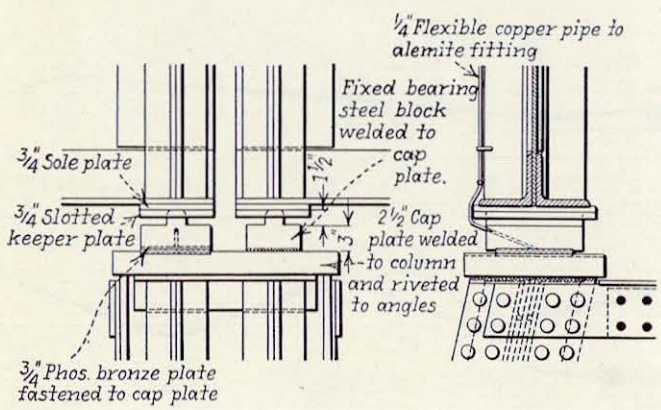
use of the 40-ft. concrete piles that could not be driven at Pier 1. Greater interest, however, is attached to the foundations for the west viaduct which consisted of concrete cylinders from 4 to 5 ft. in diameter that were carried to rock in wells excavated with an orange-peel bucket inside of rings of steel sheet piling. Owing to irregularities in the rock surface and the high water content in the unstable overburden, it proved exceedingly difficult, and in some cases impossible, to unwater these wells, so that tremie concrete had to be resorted to in these cases to seal off the water.

The viaducts are noteworthy also by reason of the design of the two abutments of the reinforced concrete, spill-through type. These are of skeleton design and the amount of material employed is unusually small for their height. The west abutment is supported on concrete cylinders extending to rock and the east abutment on piles.

Erection Methods

The steel work for the viaducts was delivered on the ground throughout their length on a construction track that was used also by a locomotive crane in erecting the towers and rocker bents. The bents were assembled in a horizontal position on the ground and then up-ended. The girders were delivered on the ground track, and with the exception of the special long spans, they were assembled in pairs with the bracing all in place. They were hoisted from the ground and set in place by a crane working from the deck.

The river bridge was erected by the semi-cantilever


1/4" Flexible copper pipe to alemite fitting
Fixed bearing steel block welded to cap plate.
3/4" Sole plate
3/4" Slotted keeper plate
1 1/2"
2 1/2" Cap plate welded to column and riveted to angles
3/4" Phos. bronze plate fastened to cap plate

Details of the Lubricated Expansion Bearings for the Girders on the Viaduct Columns

method, and the erection contractor elected to proceed with the work entirely from the east end, starting with the simple span, which was set with the aid of four steel falsework bents, which were reused, all or in part, in the erection of the other spans. The procedure is indicated by the locations of the falsework bents in each span, as shown in the general elevation.

Each of the steel bents was supported on eight steel H-section piles, beams under the posts of the bents, that rested in turn on beams framing into the piles, affording the means for the required adjustment in height and position of the bents. The piles were driven through guides in pile-driving cages that were of such height that their tops protruded above water when their bottoms rested on the river bed.

Erection was done with a gallows-frame traveler of such dimensions that it cleared the trusses and the cross frames while running on rails resting on blocking supported by the stringers and the bottom chords. At the same time, sufficient clearance was provided inside the frame so that bridge members moving on track trolleys could be pushed through it to a position where they could be picked up by the fall line of the stiff-leg derrick that was supported on top of the traveler.

In addition to the 1,650,000 cu. yd. of grading, the project involved the laying of 51,500 ft. of track in addition to 17,500 ft. of temporary track, the driving of 78,000 lin. ft. of wood piles and 7,800 lin. ft. of concrete piles, and the placing of 26,300 cu. yd. of concrete and 8,250 tons of structural steel.

Contractors on the project included the Missouri Valley Bridge Company, Leavenworth, Kan.; the Inland Construction Company and Harry A. Henske, St. Louis, Mo.; Bates & Rogers, Chicago, the American Bridge Company, Pittsburgh, Pa.; the Mt. Vernon Bridge Company, Mt. Vernon, Ohio; and John Marsh, Inc., Chicago.

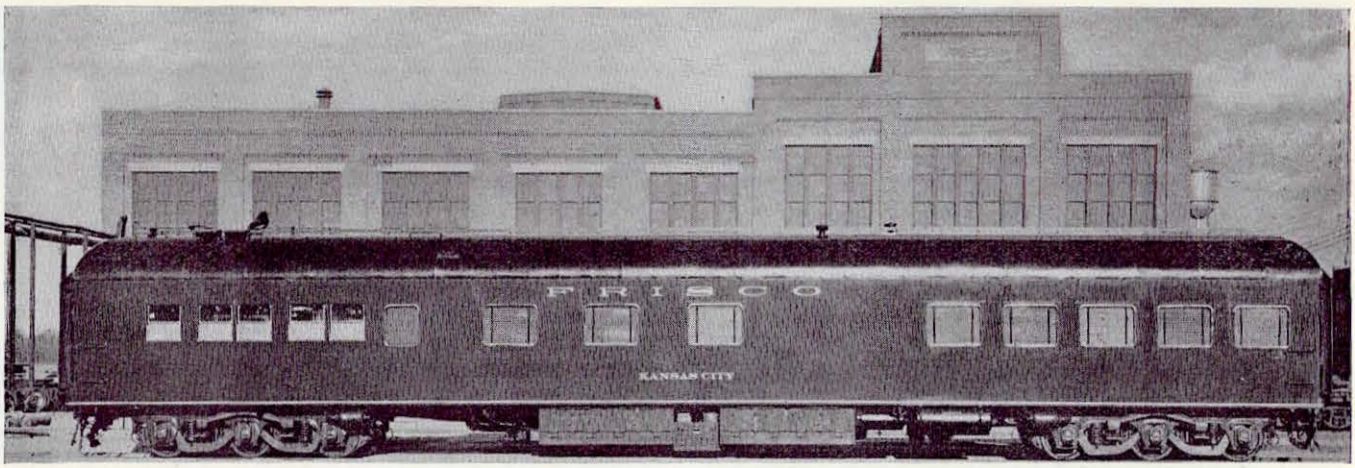
The entire project has been carried out under the direction of E. L. Crugar, chief engineer of the Wabash. Modjeski, Masters and Case, New York, acted as technical advisers on the preparation of plans for the bridge structure.

Freight Forwarding Investigation Continues

HEARINGS before the Interstate Commerce Commission in the investigation of freight forwarding, which were held in New York on October 13 to 23, were resumed at the Morrison Hotel, Chicago, on November 30. Examiners R. N. Trezise and C. A. Rice, the former presiding, heard the testimony, while William J. Walsh, attorney for the commission, directed the presentation of evidence. At the Chicago hearings, as at those in New York, the commission, through its field investigators and railroad representatives, presented the practices followed by railroads in their transactions with forwarding companies, with a view to determining whether such practices impair the earnings of the railroads, and whether they are in the public interest. At the same time the hearings were designed to determine whether freight forwarding should be regulated.

During the first two days of the Chicago hearings the reports of field investigators dealt with the operations of the Universal Carloading and Distributing Company on the New York Central and an examination of officers

(*Continued on page 828*)



One of the All-Welded Steel Cafe-Lounge Cars Built at Springfield Shops

Frisco Builds New Passenger Cars

Six all-welded cars, modern in design and equipment, placed in service in the past two years

IN 1934, the St. Louis-San Francisco built, at its own shops at Springfield, Mo., two all-welded, modern steel lounge cars which attracted the favorable attention of railroad men as well as passengers and are now in service on the "Meteor," operating between St. Louis, Mo., and Oklahoma City, Okla. In the following year, two additional cars were built, involving similar construction but arranged on the interiors to provide combination six-section sleeper and coach accommodations. These cars, now used in a night run between Memphis, Tenn., and Pensacola, Fla., were needed because at that time there was not sufficient traffic to justify either a full Pullman or a full coach. In April, 1936, two combination cafe-lounge cars incorporating a number of innovations in design, called "Kansas City" and "Birmingham," were completed and placed in service in the Kansas-City-Florida Special, operating between Kansas City, Mo., and Birmingham, Ala. One additional car of the same type, called "Springfield," will be built ready for service early in 1937.

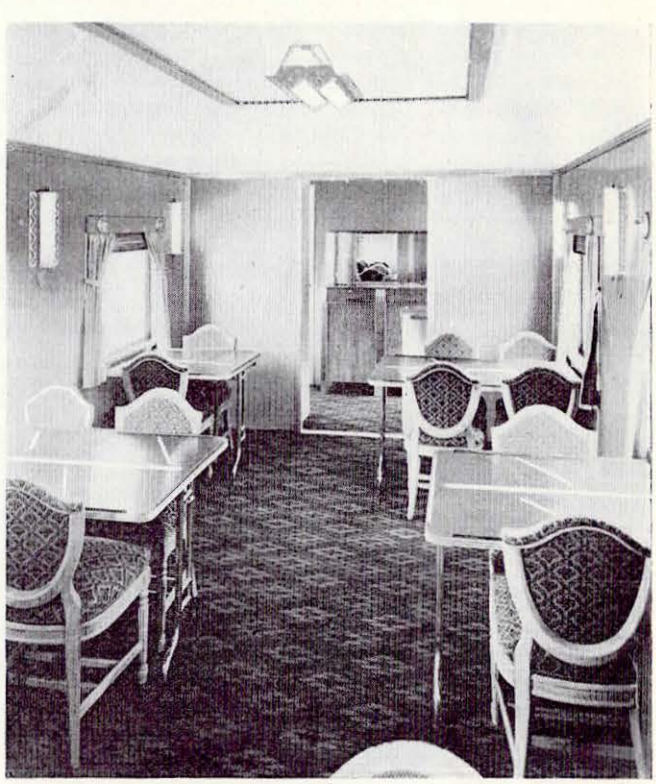
Weight Saving of 30,000 Lb. Effected

As shown in the illustrations, the bodies of these cars are welded throughout with a skeleton superstructure designed to make a stronger car than could be fabricated with rivets. By means of this construction, the car-body weight is reduced 30,000 lb. The length of each car over the buffers is slightly over 82 ft.; the distance between truck centers, 58 ft., and the 6-wheel truck wheel-base, 11 ft. A space of practically 20 ft. in one end of the car is taken up by a kitchen, pantry and buffet, an equal space adjacent thereto being occupied by the dining room with tables for 18. The lounge room in the other end of the car is slightly over 25 ft. long and has a seating capacity of 16.

The lounge room is furnished with deep and comfortable easy chairs, love seats, magazine tables, writing desk, rubber-cushioned carpet and a cozy fireplace.

All windows are equipped with double safety glass, set in chrome-nickle stainless-steel frames. Kitchen and pantry windows are of aluminum. Window interiors are equipped with Metlvane satin-finish Venetian blinds which raise and lower mechanically with gears, stay in any position, at any angle, and are noiseless. Tables, window cappings and sash stops are made of black, satin-finish Formica, inlaid with aluminum strips, designed to stand a temperature of 360 deg. F.

The interior color scheme is modernistic throughout, with satin-finish aluminum moldings, door pilasters and



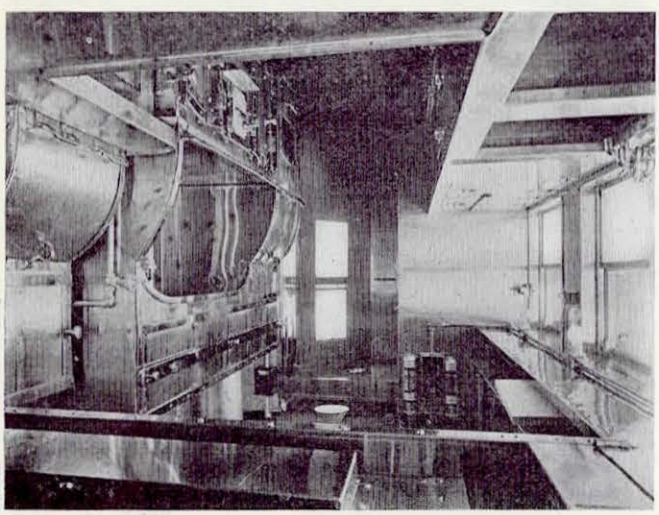
Equipment and Decorative Features in the Dining Room

The Lounge Room

door casings and aluminum ply-metal ceilings. All door locks also are aluminum. Carpets, chair covering and window drapery are all combined in a pleasing color scheme. Lamps in the ceiling and side walls are aluminum of modernistic design, made up to suit these particular cars, and the lighting effect has been worked out to give ample illumination at the reading level.

The lounge room is cooled by a 5½-ton, ice-activated overhead unit, cool air being distributed through the louvers or diffusure rail on each side of the ceiling. The dining room is cooled in the same manner, 35 per cent of fresh air being brought to both rooms through a special duct from the end of the car.

The air-conditioning system is equipped with overhead heating units, thermostatically controlled in the air ducts. Floor heat cuts in automatically when the outside temperature requires it in colder weather.



Kitchen with Shop-Made Oil-Burning Range and No Overhead Water Tanks

Unique Electrically Lighted Fireplace

One of the most unusual features in interior equipment is the fireplace, with andirons and backlog, equipped with an electrical appliance which simulates the red glow and rays of a real log fire, making for coziness in the cool fall or winter evenings.

The side walls of the lounge room are light Aspen veneer, cemented to furniture steel with rubber cement. The Aspen veneer is covered with five coats of clear lacquer, giving a natural-color egg-shell finish.

All wood chairs and tables are of bleached walnut, with the tops of tables in the lounge room covered with black Formica, except the writing desk which is bleached walnut. The buffet is of bleached walnut with black Formica top, aluminum pilasters and drawer pulls. The buffet mirror is rose-colored. All doors are made of birch, natural finish, with five coats of clear lacquer, rubbed to egg-shell gloss.

The dining room side walls are of furniture steel, painted with light green lacquer, the back wall being finished in the same color. The locker section is steel, painted with lacquer of a cafe-frappe color. The kitchen and pantry are lined with chrome-nickel steel, polished. All refrigerators, ice wells and counters are lined with the same material.

All water is carried below in a pressure tank of 310 gal. capacity. There are no overhead tanks in the kitchen. Filtered water is provided in the pantry. The kitchen range is shop-made of chrome-nickel stainless steel and equipped with a Ray oil burner, properly drafted with a revolving jack on a pivot of chrome-nickel steel. This range has proved a satisfactory installation, burning Diesel-engine distillate for fuel oil, which runs by gravity to the oil burner. The steam tables are connected to the steam line under the car.

Mechanical Details

The cork floor, 2¾ in. thick, applied over a Keystone base, is waterproofed with asphalt throughout the entire car and topped with ¼ in. of Masonite in the dining room, lounge room and hallways.

The Commonwealth one-piece cast-steel trucks are equipped with Simplex clasp brakes and a steel cable is used for connections to the equalizing levers and hand brakes in place of rods and chains. New York Universal Control air-brake equipment is applied, with 10-in. brake cylinders mounted on the trucks.

On account of the low center of gravity, these cars hold their vertical position at high speeds remarkably well, and the braking arrangement is such that no braking shocks are noticeable when the brakes are applied.

Aerial and wiring connections are applied for radio operation.

The Fonda, Johnstown & Gloversville has recently been authorized by the Public Service Commission of New York to extend its Fonda-Scotia bus line into the city of Schenectady. The decision, which also permits the extension of this route from Fonda to Fultonville, will facilitate F. J. & G. bus operations on this line. Under the previous set-up it had been unable to obtain a certificate for the run into Schenectady and the line had to be extended to that municipality through connections at Scotia with buses of the Schenectady Railway Company. The line parallels the road's Gloversville-Schenectady high speed electric railway line and was established in 1931 primarily to preempt this highway route and thus prevent any undermining of the rail line's position.

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trict were concentrated nearer the upper limits of the low-wage scale than were the corresponding employees in the South or West.

Data for 1935 were tabulated by region as well as by district. Little variation was found in the proportion of low-wage employees in the three regions of the eastern district.

The Western district, including as it does both northern and southern roads reported a relatively high percentage of low-wage employees. These employees however, tended to be concentrated in the Southwestern region. Nearly 25 percent of all employees in the latter region received 35 cents an hour or less or equivalent rates in 1935 and only 5.1 percent in the Northwestern region and 13.7 percent in the Central West.

Two regions, the Pocahontas and the Southern, make up the Southern district. They differ markedly in the proportion of low-wage employees, since the Pocahontas region reported only 4.3 percent in 1935 and the Southern region 28.0 percent. The latter percentage was the highest in any region. In part the high percentage of low-wage employees in southern territory was due to the coincidence of the peak month in the employment of maintenance of way forces with the time for which the count was made.

Low-Wage Employees by Occupations

About 92 percent of the employees reported in both periods were found in 13 of the 128 occupations or "reporting divisions" in which railroad employees are classified by the Interstate Commerce Commission. These occupations were:

Telephone-switchboard operators and office assistants
Messengers and office boys
Janitors and cleaners
Extra-gang men
Section men
Maintenance-of-way laborers (other than track), gardeners and farmers
Coach cleaners
Classified laborers (shops, engine houses, power plants)
General laborers (shops, engine houses, power plants)
General laborers (stores, ice, reclamation, timber treating plants)
Truckers (stations, warehouses, platforms)
Waiters, camp cooks, kitchen helpers
Crossing-and-bridge flagmen and gatemen

Of the 155,540 low-wage employees reported for the 1933 payroll period, about 86,000, or 55 percent were section men and extra-gang men. In the 1935 payroll period studied employees in these occupations numbered nearly 67,000, or 57 percent of the 117,000 low-wage employees reported. Classified and general laborers and crossing-and-bridge flagmen and gatemen ranked next in the number which they contributed to the total of low-paid employees. More than four-fifths of all messengers and office boys and more than two-thirds of all waiters, camp cooks and kitchen helpers were found in the low-wage brackets in both payroll periods but the total number of employees in these occupations is small.

In the Southern and Western districts for both the 1933 and 1935 periods most of the low-wage employees reported were unskilled manual workers. In the Eastern district, although a number of unskilled manual workers were reported in 1933, most of the low-wage employees were found in occupations such as crossing-and-bridge flagmen and gatemen, messengers and waiters, camp cooks and kitchen helpers. If the count had been made for the peak month of maintenance work in the East, the proportion of low-wage manual workers in the East probably would have been higher.

Hours of Low-Paid Employees

The respondent roads also reported the prevailing work period for the low-wage employees in the data for the payroll periods nearest November 1 in 1933 and 1935. In 1933, 45 percent of the employees reported were scheduled for over 40 to 48 hours per week, 38 percent for 40 hours or less and 17 percent for more than 48 hours per week. In 1935 the proportion of low-wage employees on an over-40 to 48-hours-a-week basis increased to 57 percent. Employees working on a schedule of 40 hours or less declined to 25 percent, while the proportion scheduled for more than 48 hours remained almost the same at from 17 to 19 percent.

In addition to the prevailing work period, the 1935 data showed the actual hours worked by the low-wage employees during the payroll period studied. Of the principal low-wage occupations, crossing-and-bridge flagmen and gatemen worked the longest hours, averaging 50 per week, and extra-gang men the shortest hours, averaging 38 per week. There was little significant difference in the average hours worked in different sections of the country for any given occupation.

The decrease in short time between the two periods studied caused an increase in the weekly earnings of the low-wage employees reported. Even in 1935, however, their earnings averaged less than full-time earnings. Employees paid 30 to 35 cents an hour, for example, whose full-time earnings for a 48-hour week would be between $14.40 and $16.80 actually averaged $13.24 per week. The average earnings of all employees reported for the 1935 payroll period amounted to $12.04 per week.[1]

Employees Who Received Free Housing

Since payments in kind sometimes supplement the earnings of railroad employees, the railroads were asked to report the number of low-wage employees who received free housing. Slightly less than 15 percent of the reported employees received free housing in 1933 and slightly more than 15 percent in 1935. With few exceptions the employees who received free housing worked for Southern or Western railroads, and nearly all were section men and extra-gang men.

The rates of pay of more than three-fourths of the reported employees in both periods were fixed by agreement. The proportion was somewhat greater in the upper ranges of the low-wage scale than in the lower and was slightly larger in 1935 than in 1933.

Estimated Cost of Establishing Wage Minimums

The large number of employees reported as receiving 35 cents an hour or less in 1935, even after the restoration of the 10 percent payroll deduction, suggests the desirability of some minimum limits to the wages paid. The cost of applying minimums of $12, $13, $14 and $15 per week was therefore estimated. A minimum wage of $15 applied to all Class I railroads would cost annually about $9,000,000 or six-tenths of one percent of the annual payroll, based on the rates received for the payroll period nearest November 1, 1935.

Long Hours Irrespective of Rates of Pay

The question of reducing hours has assumed such importance that it was thought desirable to include a study of the hours worked by all employees who were on duty more than 48 hours per week or more than 8 hours per day, irrespective of the rate of pay received. A questionnaire was submitted to the same railroads covered in Part 1 to ascertain this information. Executives and train- and engine-service employees were not included in this portion of the study. There is no adequate record of the hours worked by the first group of employees and the second group is paid according to a dual system of mileage rates and daily minima—a system of wage payment which makes it difficult to compare hours worked. The questionnaire called for regularly scheduled hours of work so that overtime hours or short time, other than scheduled short time, was not shown.

Excluding the executive and train- and engine-service groups, it was found that 110,250 employees during the payroll period nearest May 1, 1934 worked more than 48 hours per week. This number constituted 12.5 percent of total employment in the occupations included in the study. About 40,000 were reported who worked over 8 hours per day. Since it is unlikely that many of the latter worked less than 48 hours at least two-thirds of the employees reported as on duty more than 48 hours per week must, therefore, have worked on a 7-day schedule.

Long-hour schedules, that is, those involving more than 48 hours per week, were more prevalent in the South and West than in the East. About 9 percent of the employees in the Eastern district worked long hours, about 16 percent in the Southern district and about 15 percent in the Western district. In all districts in the country, hours in excess of 56 per week were found to be the exception. Over three-fourths of the long hours employees reported worked from 49 to 56 hours per week.

Long hours were most common among general foremen en-

[1] Excluding certain employees whose earnings were reduced by voluntary absence, sickness, or other similar causes, or who received a large proportion of their earnings as gratuities.

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of all this is the direction of the skill of the chemist away from useful employments which promote health and happiness to the production of poison gases by which millions of innocent people may in an instant be put to death. This extreme illustration can be easily capped by dozens of others in which direct physical injury to human life is decreasingly in evidence, but where the disintegrating effects upon taste and morals may be convincingly exhibited.

"All this line of consideration reduces to the familiar ethical truism that no fact taken of and by itself is necessarily either good or evil, but inevitably depends upon the purpose to which it is put and the results which emanate from its use. In this sense, it must be admitted that the great task of our day and generation lies more in the field of morals and even religion, if you will, than in the field of engineering and economics narrowly conceived.

"As I read the life of George Westinghouse, I carry away the conviction that he would himself be increasingly disposed to take this view had his life rounded out the century. Certainly his own career is a vivid object lesson in the advantages of simple living, high aims and hard work, and it is impossible to believe that he would have felt anything but regret could it be shown that the industrial age to which he gave such brilliant leadership throughout his life was contributing to soften the fibre of the race, or to introduce into it elements of moral disintegrations. Most of us believe that this is quite untrue and that the great engineering victories of men like Westinghouse constitute a blazing challenge to us to build a social order able to incorporate in itself all these blessings, while safeguarding the finest values that inhere in the human spirit."

Mr. Cravath's Estimate of Westinghouse

Mr. Cravath recalled a personal association with George Westinghouse which began fifty years ago. "He was always the same," said Mr. Cravath, "simple, unassuming, direct, frank, courageous, unfaltering in his faith and supremely confident in the ultimate triumph of his plans." Comparing him with other men of his generation Mr. Cravath said that he knew no one who combined so many of the qualities that made for greatness.

"Besides being a great inventor," said Mr. Cravath, "Mr. Westinghouse was a great organizer. Perhaps in his lifetime this assertion would have been questioned by some; I do not see how it can be questioned now. Remember that I am attributing to him as an organizer the qualities of greatness and not the qualities of superficial efficiency. He undoubtedly has the faults of his qualities. Every great man has. Judged by standards of temporary efficiency and immediate results his methods of organization sometimes seemed unsound. He had the strength of character and the wisdom to submit to temporary inconvenience and to sacrifice temporary advantage to achieve his ultimate ends."

Mr. Westinghouse was also a great financier, said Mr. Cravath. "He was a pioneer in at least four important fields of industry. His enterprises from their very nature, required enormous capital. Several, indeed all, of his enterprises were of such character that a long period of experimentation and development preceded the ultimate success that would yield profits. Capital for enterprises of that character was difficult to obtain, and yet Mr. Westinghouse, starting life without capital of his own, was able to obtain, almost unaided, by the sheer force of his faith, by his power to inspire confidence, by the qualities of his genius, the enormous sums required for the development of his enterprises. He rarely numbered among his close associates important financiers or wealthy men. While he often tried to work in concert with strong financial associates he usually found himself in periods of financial stress compelled to rely on his own energies and resources. In at least two great financial crises, when the financiers had given up the task as hopeless, Mr. Westinghouse, by his faith, his untiring energy and by the exercise of a power to influence men that I have never seen equalled, was able to weather the financial storm."

Completing his estimate of Mr. Westinghouse's character, Mr. Cravath said: "In all these fields of endeavor as an inventor, as an organizer, and financier judged by the standards that I was able to apply, he was a great genius. In each field he combined beyond any man I have ever known the qualities that seem to me to go to make up genius. They are mental energy, imagination, faith, courage and character. These qualities were combined in George Westinghouse to a remarkable degree. Any man who has been his business associate for a quarter of a century has often seen him under circumstances that required the exercise of all these qualities. A man who lacked any of them could not have carried the burden in the face of discouragement and opposition that so often rested upon his shoulders."

Freight Forwarding Investigation

(*Continued from page 824*)

of that railroad on certain practices. The facilities under discussion were those in Chicago, Detroit, Mich., Cincinnati, Ohio, Indianapolis, Ind., East St. Louis, Ill., Cleveland, Ohio, and Muncie, Ill. The subjects dealt with included facilities provided by the railroad for Universal, rentals, charges for handling freight at stations, switching of cars and tariff violations. The testimony of the investigators showed that the New York Central provides facilities either by utilizing present buildings or constructing new ones, generally charging a rental. In some instances, according to witnesses, additional space was taken by Universal without an increase in the rental, and without a new lease. Based upon a return of six per cent on investments in land and 10 per cent on improvements, the rentals, according to witnesses, are too low. The rate of return on these facilities for the system, using the I.C.C. valuation, was stated to be 1.47 per cent. At Muncie, Ind., the rate of return on the lease for space occupied by Universal is 0.85 per cent. Here 90 per cent of the business handled through the facilities is shipped by truck.

Testimony as to the operations at Chicago revealed several departures from standard practice. Instances were cited wherein cars were spotted for loading and respotted the following day without an additional switching charge. Testimony also showed that Universal refused to pay certain bills for switching.

Another practice investigated was that in which Universal ordered 50-ft. box cars, and the railroad, not having cars of that size, furnished two 40-ft. cars, and applied the same minimum as applies to the 50-ft. car. Another practice questioned was the departure from tariffs governing cars and "trailers." Under the tariff the traffic of forwarding companies can be handled in two cars (a car and a "trailer"), with a single rate for the total, providing the first car is loaded to the minimum of 36,000 lb. It was shown that on traffic shipped to New Orleans, La., by Universal from its Chicago station on the New York Central, minimum weights were disregarded.

Labor Conditions In Trucking

Report by former Co-ordinator Eastman shows long hours and low pay in intercity operations

WASHINGTON, D. C.

JOSEPH B. EASTMAN, former federal co-ordinator of transportation, on November 30, made public Part II of a report on Hours, Wages, and Working Conditions in the Intercity Motor Transport Industries. Part I, released in October, relates to bus transportation, and Part III, to be released shortly, deals with subjects common to bus and truck transportation. This report is one of a series prepared by the Co-ordinator's Section of Research and the Section of Labor Relations which, together, constitute a survey of labor standards in all forms of domestic transportation other than that of a purely local character. It will be followed in the near future by a concluding report on Comparative Labor Standards in Transportation.

In his foreword to the companion bus report, the former Co-ordinator indicated that these investigations were instituted under section 13 of the emergency railroad transportation act, 1933, and added that he "deemed it desirable to ascertain, so far as possible, the significant facts, not only in regard to railroad labor conditions and relations, but also in regard to such conditions and relations in other and competing forms of transportation. One reason was the claim, made by the railroads, that they are handicapped in competition because labor standards are higher in the railroad industry than in the other forms of transportation. It was also alleged that some companies, in certain of these other branches of transportation, were similarly handicapped in competition because of the lower labor standards maintained by other companies."

These investigations were instituted also with the thought that they might to some extent disclose the need for legislation. Since this investigation was instituted, however, the motor carrier act has become law, and under it the Interstate Commerce Commission now has the power, among other things, to establish reasonable requirements with respect to qualifications and maximum hours of service of employees, and safety of operation and equipment, of motor carriers. Furthermore, the emergency transportation act came to an end on June 16, and the office of Co-ordinator ceased to exist. Because of these circumstances, the report is confined to a presentation of the facts developed, with such comment on those facts as seemed pertinent to their consideration.

The report is a volume of 258 pages with appendices, including a chapter summarizing the data.

Data filed with the Interstate Commerce Commission as of June, 1936, in connection with applications for certificates or permits, indicated that about 69 per cent of the applicants had 1 or 2 vehicles each and that the vehicles so owned constituted about 25 per cent of those for which data were furnished. At the other extreme, 1.5 per cent of the applicants, each with over 25 vehicles, had 22 per cent of the aggregate number of vehicles. Approximately 45 per cent of the vehicles were owned singly or in fleets up to 5. However, many additional applications were filed which did not set out the number of vehicles.

Railroads have interested themselves in over-the-road trucking operations, though to a relatively less degree than they have in bus operations.

No basis exists for making a reliable estimate of the size of the intercity trucking industry. With code registrations as a basis, it has been computed that in 1934 there probably were about 250,000 trucks in the service of intercity for-hire operations (defined to exclude operations within a 25-mile radius). This estimate probably does not suffice to include all vehicles used in ancillary pick-up and delivery operations, or farm-owned, for-hire trucks.

Size and Composition of the Labor Force

Nearly half of the companies embraced in a field survey made in 1933 employed no maintenance force and 20 per cent had no employed office or terminal workers. The size and consist of the labor force can be estimated only with difficulty. The report develops an estimated employed labor force in 1934 of 273,500, consisting of 121,000 intercity drivers, 38,500 drivers of local trucks engaged in ancillary pick-up and delivery operations, 42,500 drivers' helpers, 19,000 garage, maintenance and shop employees, and 52,500 office and terminal workers. It also estimates that owner-drivers numbered 121,500.

Data on labor costs, furnished in 1932 by a group of common, contract and private carriers, indicated that such costs constituted about 45 per cent of the operating expenses, including taxes, and 47.5 per cent if taxes are excluded. In terms of the operating revenues of for-hire carriers, the ratio was 37.6 per cent.

There is some interest in the number of persons who earn their livelihood from the operation of intercity trucks, irrespective of ownership of the vehicles and whether the latter are operated as common corriers, contract carriers, or privately. The number of such persons was estimated in 1933 and 1934 to average slightly less than 2 per truck. Included in this average are wage earners of all capacities; persons paid on commission; owner-drivers; members of owner-operators' families who furnish substantial service in the trucking operation; helpers and roustabouts, some paid wages and others working for their meals and a place to sleep; and a proportionate share of the labor force in commercial garages, repair shops, and gasoline stations engaged in the servicing and repair of trucks for operators who employ no maintenance forces of their own. On that basis, with some 500,000 private and for-hire trucks moving intercity, a total personnel is indicated of approximately 950,000.

Sources of Information

Sources of information as to hours, wages and working conditions, explained in detail in the report, comprise field investigations made as of July, 1933, and October, 1935, replies made by the railroads for the same period covering their direct operations and those in which they had an interest equal to 25 per cent or more of the voting stock, questionnaire returns received from common, contract and private carriers in 1933, road checks by state highway patrols, certain Code Authority reports, and miscellaneous sources. The source designated as "1933 railroad truck reports" did not embrace

all operations in which the railroads were interested, as some were included in that year's field investigation. Generally speaking, the carriers which could furnish the data required, whether to field agents or by means of a questionnaire, were considerably above average size.

Hours and Earnings, Labor Force as a Whole

All employees included in the October, 1935, field study averaged 49.6 hours of work per week; those included in that month's railroad truck reports averaged 43.9 hours. The general averages from the survey and reports of July, 1933, were 50.4 and 54.2. There thus is indicated a decline of less than 1 hour per week in the case of the field studies and of 10.3 hours in the case of the railroad truck reports. Average weekly earnings were substantially unchanged as between the dates of the two railroad truck reports ($23.23 in July, 1933, $23.66 in October, 1935). In the case of the field studies an advance was indicated from $22.78 to $25.87. Average earnings per hour showed an advance in both inquiries: from 45.2 to 52.2 cents in the case of the field studies and from 42.8 to 53.9 in the case of the railroad truck reports.

Average Hours and Earnings of Drivers, Maintenance, and Station and Office Employees in Intercity Motor-Truck Operations, 1933-1935

Occupational group and source	Number of Employees	Average hours worked in week	Average earnings in week	Average earnings per hour
All employees:				
1935: Field study (October)	10,701	49.6	$25.87	$0.522
Railroad truck reports (October)	2,250	43.9	23.66	.539
1934: Code Authority reports (July)	3,903	36.2	18.24	.503
1933: Field study (July)	7,129	50.4	22.78	.452
Railroad truck reports (July)	872	54.2	23.23	.428
All crew members:				
1935: Field study (October)	6,130	50.3	26.70	.531
Railroad truck reports (October)	1,567	45.4	25.28	5.57
1934: Code Authority reports (July)	2,998	35.0	18.04	.515
1933: Field study (July)	4,052	50.7	22.65	.447
Railroad truck reports (July)	463	55.1	21.84	.396
Regular drivers:				
1935: Field study (October)	3,118	51.6	28.96	.561
Railroad truck reports (October)	628	48.8	27.67	.567
1934: Code Authority reports (July)	2,571	36.2	18.78	.519
1933: Field study (July)	2,348	52.3	24.68	.472
Railroad truck reports (July)	381[1]	57.9	23.31	.402
Maintenance employees:				
1935: Field study (October)	910	50.2	27.42	.546
Railroad truck reports (October)	171	46.3	24.56	.530
1934: Code Authority reports (July)	170[2]	40.4	21.26	.527
1933: Field study (July)	658	53.3	25.84	.485
Railroad truck reports (July)	248	58.7	28.47	.485
Office and terminal employees:				
1935: Field study (October)	3,661	48.2	24.10	.500
Railroad truck reports (October)	512	38.7	18.38	.475
1934: Code Authority reports (July)	735[3]	40.9	18.30	.447
1933: Field study (July)	2,419	49.0	22.14	.448
Railroad truck reports (July)	161	44.7	19.13	.428

[1] Includes relief drivers.
[2] Mechanics and helpers.
[3] Includes 222 "Other employees," some of whom may be related to maintenance.

Average Hours and Earnings of Drivers and Helpers

In most of the sources drawn upon, from 82 to 90 percent of the truck crews were carried as drivers. The remainder, with few exceptions, were designated as helpers or laborers. On the average, about one-eighth of the trucks included in certain of the 1933 surveys were manned by 2 persons and 1.3 percent by 3 persons. Lengths of haul enter into the number of persons carried, however, as shown by the fact that in a group of longer than average runs the ratio of two-driver trucks rose as high as 35 percent. Drivers, intercity and local, constituted from half to two-thirds of the employed personnel embraced in the several inquiries.

Averaged the country over, the regular intercity drivers surveyed in the 1935 field study worked 51.6 hours per week, for which they were paid $28.96, equivalent to 56.1 cents per hour. The railroad truck reports for the same month showed an average work-week of 48.8 hours, weekly earnings of $27.67, and hourly earnings of 56.7 cents. The 1933 field study yielded an average work-week of 52.3 hours, weekly earnings of $24.68, and hourly earnings of 47.2 cents. A longer average week and lower average earnings were found in the railroad truck reports of that year. Attention is called to considerations which bear on these averages. Reference is also made to the fact that railroad intercity truck operations are limited in number in the South, an area, generally speaking, of low hourly earnings for drivers. Shortest average hours per week reported in 1933 were those set out in the questionnaire returns (owing apparently to a greater percentage of idle days), but the hourly earnings of drivers in the employ of the for-hire carriers in this group were identical with those found in that year's field study (47.2 cents). Drivers working for private industries averaged 46.6 hours per week and about 50 cents an hour.

Extra drivers, in both 1933 and 1935, put in, on the average, about three-fourth as many hours as regular drivers and earned 4 to 8 percent less per hour. Local drivers in the employ of intercity operators were found in the 1935 field study to be averaging 50.8 hours per week and 53.4 cents per hour; in that month's railroad truck reports (intercity operations only), 45.2 hours and 58.9 cents. Helpers and laborers on trucks averaged 46.6 hours per week in the 1935 field study and earned $17.49 per week or 37.5 cents per hour. In the July, 1933, field study they were found to average 44 hours and $16.03 per week, or 36.4 cents per hour. The railroad truck reports developed average earnings per hour of 46.5 cents in 1935 and 35.6 cents in 1933.

The work-week of regular intercity drivers, 52.3 hours in the 1933 field study, was broken up into 38.6 hours en route and 13.7 hours otherwise on duty. The latter hours were 26 percent of the total. The average work day of 9.7 hours was similarly broken up into an en route period of 7.4 hours and an other duty period of 2.3 hours. Time en route is not, of course, equivalent to driving time.

The report also develops information respecting geographic variations in drivers' and helpers' hours and earnings, and as to the extent of variation of such hours and earnings with size of community out of which drivers operate with size of company, with basis of wage payment, i.e. mile-, trip-, or time-rate, and, in the case of private trucking, by industry.

Range of Hours and Earnings of Drivers and Helpers

The hours worked in a week by 2,348 regular intercity drivers studied in July, 1933, fell below 48 in one-third of the instances and ranged from 48 and below 52, from 52 and below 60, from 60 and below 72, and from 72 up, in 14, 22, 24, and 7 percent of the cases, respectively. Of the common and contract carriers included in the 1933 questionnaire reports, 82 and 70 percent, respectively, indicated that they were operating on a 5½ or 6-day week, and 9 and 11 percent, respectively, on a 5-day week. Nine percent of the first and 19 percent of the second group reported 6½ or 7 days of operation per week. The classification as between common and contract carriers does not, however, necessarily reflect the actual legal status of these operators. A proportionately larger number of drivers were on a 5½- or 6-day

basis or less. Regular intercity drivers averaged 5.4 days of work per week, according to the 1933 field study.

Of the regular intercity drivers included in the 1933 field study, 29 per cent earned less than $20 per week (including a few who did not work full time), 25 per cent, $20 and below $25, 33 per cent, $25 and below $35, and 13 per cent, $35 and below $55. For helpers these percentages were 67, 21, 8, and 4, respectively. Monthly earnings of individual regular, full-time drivers reported in the 19355 field study ranged from as little as $20 to $262, and in the 1935 railroad reports from $61 to $250. The average hourly earnings of 19 per cent of these drivers were below 35 cents, of 37 per cent 35 cents and below 50 cents, of 36 per cent, 50 cents and below 75 cents, and of 8 per cent, 75 cents or more.

The labor agreements summarized in the concluding section of Part III of the report yield hourly rates for intercity drivers which range from about 56 cents to $1.07 per hour, but more commonly from about 65 to about 85 cents. Variation of rates with size of vehicle unit operated accounts in part for the range indicated. Generally, an 8-hour basic day and 48-hour bahic work-week are to be noted, with time and one-half for overtime. Helpers' hourly pay is there shown to range from 40 to 70 cents, but more commonly from 50 to 58 cents.

A standard work day of 8 and under 9 hours was reported by 39 percent of the companies surveyed in the 1935 field study and affected 44.5 percent of the intercity drivers. A day of 9 and under 10 hours was the standard reported by 21 per cent of the companies, but this standard affected less than 12 per cent of the intercity drivers. A day of 10 hours or more was reported as standard by 36 percent of the companies; it affected 40 percent of the intercity drivers, of whom 12 percent were in the employ of companies observing a standard day of 12 to 18 hours. A small number of companies reported less than an 8-hour day. The 1935 railroad truck reports indicated that 72 percent of the intercity drivers were in the employ of companies having an 8- and under 9-hour standard day, 7.5 percent in the employ of companies having a 9- and under 10-hour day, and 20 percent in the employ of companies having a standard day of 10 hours or over. More than 42 percent of the companies included in the 1933 field study reported a standard day's work of between 8 and 9 hours, 19 percent a 9- and under 10-hour day, and 34 percent recognized 10 hours or more as a standard. Data from other sources are set out in the report. The 1933 study showed also that a considerable number of companies recognized a standard day set in miles, including some which also used a time basis. For more than 62 percent of these the standard was less than 200 miles, for 32 percent, 200 but under 300 miles, and for nearly 5 percent, 300 miles or over.

A maximum permissible number of hours of work, ranging from 8 hours to more than 16, was set by 73 of the 312 companies covered in the 1933 field study. For 9 companies the limit was between 8 and 10 hours, for 25, between 10 and 12 hours, for 15, between 12 and 14 hours, for 6, between 14 and 16 hours, and for 18, between 16 and 20 hours.

Drivers' usual consecutive hours on the road, as shown by the 1935 field study, ranged from less than 4 to more than 48, but their usual consecutive hours at the wheel ranged generally from 1 to not more than 8. The consecutive hours on the road, as well as the usual and maximum consecutive hours at the wheel, reported for railroad truck operations were generally less than those shown by the field study. The 1933 questionnaire returns indicated that the usual consecutive hours on the road were from 9 to 12 in the case of 7.2 per cent of the intercity drivers in the employ of common carriers, of 20.4 per cent of those in the employ of contract carriers, and 13.9 per cent of those in the employ of private carriers.

The maximum permissible hours of unbroken driving were less than 8 for about 81 per cent of all drivers covered in the 1935 field study, 8 and less than 10 for approximately 8 per cent, and for some 10 per cent the maximum ranged from 10 to 16 hours. The 1933 questionnaire data for common carriers indicated a maximum of 8 and less than 10 hours for approximately 17 per cent of 1,302 drivers, 10 hours for almost 20 per cent, and up to 16 for 12 per cent. The maximum for drivers in the employ of contract carriers ranged from 8 and less than 10 for slightly more than 19 per cent of 493 drivers, from 10 to 16 hours for 45 per cent, and for 6 per cent the maximum was set at 18 hours. Of 429 drivers in the employ of private carriers, 20.5 per cent had a maximum permissible number of hours at the wheel of 8 and less than 10, 12.6 per cent of 10 hours, 22.6 per cent of 12 hours, and 3 per cent of 14 or 15 hours.

The average distance covered ranged from 51 miles for trips of less than 4 hours' duration up to 1,030 miles on runs of 48 hours or more, according to the 1935 field study. The average was 127 miles for runs of 6 to 8 hours in 1935 and 122 miles for such runs in 1933; for runs of 12 to 14 hours, 255 in 1935 and 265 in 1933. Over-all speeds, stops included, usually averaged under normal conditions from 17 to 22 miles per hour in each year.

The report also sets out information respecting period off-duty after continuous road service payment for overtime work, bonus systems, payment for drivers' time at court and of layover and out-of-pocket expenses, use of sleeper cabs and provision of other sleeping accommodations, requirements respecting uniforms, and vacation and sick-leave privileges.

The information summarized is said to be representative of conditions in a major part of the intercity trucking industry. However, it requires supplementation from sources which draw more closely upon small-scale and possibly sub-standard operations, including those of many owner-drivers. Road checks made for the purposes of this report by the highway patrols of 5 states (Pennsylvania, Ohio, Indiana, Michigan, and New Jersey) in the winter of 1933-1934 throw light on run-of-the-road conditions (barring known short-haul operations). One-half of the drivers were found to be on trips requiring 10 hours or more of continuous road duty, 42 per cent, 12 or more hours, 34 per cent, 14 or more hours, and 26 per cent, 16 or more hours. The ratio of long trips was very much greater than that found in the other studies summarized. However, a larger proportion of the trucks carried two drivers. Three-fourths of the drivers had some period of rest before their trips began. Usually the period was substantial, running as high as 2 to 4 days off duty. The remaining fourth reported an average of 3.9 hours of work before the trip was begun and a range of from 2.6 to 9.1 hours of such prior work. The amount of rest expected after completion of the trip is also set out in the report.

Examples of Long Hours of Truck Drivers

"The data as to the hours of service given in the text of the report," it says, are not in themselves sufficient to convey a full understanding of the rigorous exactions which are imposed on some drivers by their employers, and on others by what they conceive to be economic necessity. The statistics were derived from samples. They

do not indicate conclusively the proportions of *all* drivers of intercity trucks who are subject to extremely long hours. It may reasonably be expected that further extension of the coverage of the statistical inquiry would raise the percentage of such drivers above the proportions indicated by the most trustworthy present samples.

"Moreover, related facts, descriptive of work done and conditions met by drivers subject to over-long hours of service, indicate the existence of conditions which, irrespective of the number of drivers affected, require consideration."

Accordingly, there are presented a series of brief statements illustrative of extreme conditions in over-the-road motor freight operations. A number of the statements result directly from personal interviews by field agents of the Co-ordinator. Several are supported by affidavits. Most of the statements are as of the latter part of 1933.

Hours and Earnings of Maintenance Force

A little over one-half the companies surveyed in the 1933 field study had maintenance forces; for intercity trucking as a whole the ratio would be materially lower. Such forces constituted about 10 per cent of all employees covered in that survey. The average force then analyzed consisted of 4 men, or 0.163 man per truck owned. In the October, 1935, field study the average was 6.3 men, or 0.186 man per truck, and in the 1935 railroad truck reports, 18 men, or 0.203 man per truck. Skilled mechanics were found to comprise about 55 per cent of the maintenance force, and mechanics, foremen and mechanics' helpers about 70 to 75 per cent. Stock clerks, car washers and service men generally made up the remainder of the group.

Average hours per week for the group as a whole declined from 53.3 to 50.2, or 6 per cent, in the period between the July, 1933, field study and that of October, 1935. Average earnings per week rose from $25.84 to $27.42 or about 6 per cent, and average earnings per hour, from 48.5 cents to 54.6 cents, or about 12.6 per cent. Less complete comparisons may be made from the corresponding railroad truck reports. In both years, average hourly earnings were, however, substantially the same in the two sets of reports. The average hours worked per day were, according to the 1933 field study, 8.9. Days on which work was performed ranged from 5.9 to 6.2 in the several occupations and averaged 6.0. The changes between 1933 and 1935 appear to have been generally distributed geographically.

The national averages presented above, it is explained necessarily obscure regional differences in conditions. In the earlier period the lowest weekly hours were found in the West North Central States and the highest in the New England and East South Central states (57.4 and 58.2, respectively). Average hours per day ranged from 8.1 in the first group of states to 9.4 in the second and third groups. Average weekly earnings ranged from $21.41 in the West South Central states to $32.61 in New England, and average hourly earnings from 38.3 cents in the East South Central states to 56.8 cents in New England. Of the several railroad regions, the Pocahontas showed the longest hours per week and day and the Northwestern the shortest. Earnings per week and hour were lowest in the Southern region and highest in New England.

The report develops in considerable detail the hours and earnings of individual occupations, methods of wage payments, payment for overtime, and vacation and sick leave privileges. Information is presented respecting private as well as for-hire operations.

The separate identity of these two groups of employees is most clearly manifest in the relatively large-scale operations. One group consists of terminal foremen, dispatchers, freight handlers and laborers, and the second of agents, bookkeepers, clerks, traffic solicitors and others. A considerable number of established trucking enterprises have no employed office or terminal force of any description. In both the 1933 and the 1935 field study, office and terminal workers represented 34 per cent of the total employees reported. The average force in the 1933 study consisted of 9.5 persons, or 0.6 persons per truck owned; in the 1935 field study, of 18.9 persons, or 0.748 person per truck; and in the 1935 railroad truck reports, of 32.9 persons, or 0.515 person per truck. The 1935 field study showed the following percentage distribution of the force: Freight handlers, 31; clerks, 24; bookkeepers, 11; solicitors, 10; foremen, 6; stenographers, 6; dispatchers, 5; and others, 7. In the 1935 railroad truck reports, freight handlers constituted 56 per cent of the total.

Average hours per week for the group as a whole were approximately the same in the two field studies; 49 hours in 1933 and 48.2 in 1935. Weekly earnings averaged $22.14 in the earlier study and $24.10 in the latter; hourly earnings advanced from 44.8 to 50.0 cents. In the 1933 study men employees averaged 49.9 hours on duty per week and earned $23.28 per week or 46.7 cents per hour; women averagd 44.8 hours, $16.48, and 36.7 cents. Men averaged a 5.8- and women a 5.9-day week. The 1933 and 1935 railroad truck reports covered a much smaller aggregate number of workers. The work week was less than in the corresponding field studies and hourly earnings were close to the average found in those studies. In 1933 questionnaire reports revealed considerably lower average hours per week and earnings per hour in every occupation than did that year's field study.

The 1933 field study revealed little geographic variation in average hours worked. A wider scatter was found in the 1935 study; from 45.9 hours per week in the Pacific States to 54.5 in the East South Central, and from $15.30 per week, or 28.1 cents per hour, in the latter district to $28.33 per week, or 59.4 cents per hour, in New England.

The report sets out in considerable detail the hours and earnings of individual occupations, and develops information respecting methods of wage payment, payment for overtime, and vacation and sick leave privileges. Data are presented for private as well as for-hire operations.

Drivers for railway express companies.—A basis for comparison of hours and earnings averaged by truck drivers in pick-up and delivery and other local for-hire service is afforded from records of the hours and earnings of drivers ("vehicle employees") of express company trucks. In July, 1933, the 7,300 drivers for the Railway Express Agency averaged 46.8 hours on duty per week and earned $30.36 per week or 64.9 cents per hour. The hours were 9 per cent less than those of local drivers in the 1933 field study and 2 per cent less than those of drivers for local companies reported in the 1933 railroad truck reports. In round figures, the weekly earnings averaged by drivers in those two groups would have had to be increased by 45 per cent, and the hourly earnings by 60 per cent, to bring them up to the Express Agency levels In the first nine months of 1934, the averages for the combined vehicle forces of the Railway Express Agency and Southeastern Express Company were 48.6 hours per week, $31.25 per week, and 64.3 cents per hour. In drawing conclusions it is necessary, of course, to consider the differences in the work performed by the several groups of drivers.

What Are Lowest Railway Wages?

Co-ordinator reports only 10 per cent of employees receive less than 35 cents an hour and only 12½ per cent work over 48 hours weekly

WASHINGTON, D. C.

TWO days after he had released a report of an investigation showing the prevailing low wages and long hours of employees in the intercity trucking industry the former co-ordinator of transportation, Joseph B. Eastman, on December 2 made public another report completed under the direction of Otto S. Beyer, formerly director of his Section of Labor Relations, as to the extent of low wages and long hours in the railroad industry. The report shows 117,081, or 10.4 per cent of the railroad employees, receiving 35 cents an hour or less in the payroll period nearest to November 1, 1935. It was also found that 110,250 employees during the payroll period nearest May 1, 1934, excluding the executive and train and engine service groups, worked more than 48 hours per week. This number constituted 12.5 per cent of the total employment in the occupations included in the study. The number of low-wage employees had declined about 25 per cent as compared with the number for the period nearest November 1, 1933.

An estimate is given that a minimum wage of $15 a week applied to all Class I railroads would cost annually about $9,000,000 or six-tenths of one per cent of the annual payroll.

"While it was known that there were a substantial number of railroad employees who worked as long as 12 hours a day and that there were a group working 7 days per week, it has not been possible to appraise the hours situation accurately from existing statistics," Mr. Eastman says in a foreword. "Similarly, the extent to which railroad employees are receiving relatively low rates of pay could not be determined without a special investigation. Because of these gaps in existing data, and because some complaints had reached this office in regard to these matters, a study of the extent to which long hours and low wages prevailed in the railroad industry was undertaken.

Railroads Co-operated Generously

"The railroads of the country cooperated generously in providing the basic data for this investigation."

A memorandum to Mr. Eastman by Edwin M. Fitch, statistician of the Section of Labor Relations recalls that Mr. Eastman had addressed a memorandum dated September 2, 1933, to the railroad presidents and railroad labor executives urging that they jointly give consideration to the establishment of minimum wages for those railroad employees still being paid wage rates less than those established by codes of fair competition approved by the President for comparable industries, and second, that, where employees are required or permitted to work more than eight hours per day as regular assignments, an effort be made to reduce the working week to 48 hours. The railroads and their employees responded to the suggestion, he says, and some improvements were effected. However, it appeared that the facts required for a complete appraisal of the extent to which long hours and low wages prevailed in the railroad industry were not known. As a result of Mr. Eastman's suggestions, the report says, "by May, 1934, the number of employees regularly working long hours had probably been reduced to the lowest point ever attained in the industry," but "by spring of 1934 the trend towards increased work spreading which accompanied the depression seems to have ended."

"This situation suggests," Mr. Fitch remarks, "that there is still opportunity in the railroad industry for the adjustment of rates and hours in those instances where long hours or low rates are out of line with the practices of the industry generally."

Following are the summary and conclusions of the 142-page report:

Summary and Conclusions

In December, 1933, the Co-ordinator asked the Class 1 railroads[1] to report the number of their employees who received 35 cents an hour or less or the equivalent daily, weekly or monthly rates during the payroll period nearest November 1, 1933. By the time these reports were tabulated the 10 per cent pay deduction of February 1, 1932 had been fully restored. Inasmuch as there had been some confusion in interpreting the returns as reported, it was decided to withhold the results until it could be brought up to date by comparison with the low-wage situation in the railroad industry two years later. An additional questionnaire was therefore sent to Class I railroads asking for similar information regarding employees in the low-wage brackets for the payroll period nearest November 1, 1935. Part I of this report is concerned with an analysis and comparison of the data contained in the replies to these two sets of questionnaires.

A study of hours worked by railroad employees should of course include all employees irrespective of whether they are receiving high or low wages. A separate questionnaire was therefore sent to all Class I roads[2] asking for the number who regularly worked more than 48 hours per week or more than 8 hours per day, during the payroll period nearest May 1, 1934. The information obtained from the long hours questionnaire is summarized in Part II.

Wages and Hours of Employees in the Low Wage Brackets

For the payroll period nearest November 1, 1933, all Class I railroads[1] reported 155,540 employees who received 35 cents an hour or less or the equivalent daily, weekly and monthly rates. This number represented 13.7 percent of total railroad employment for that period. Two years later the number of low-wage employees had declined to 117,081, or by about 25 percent, and these employees constituted 10.4 percent of total railroad employment. The rates of pay reported in both periods were the actual rates paid.[2]

The number and percent of employees in the low-wage brackets declined much more in the East between 1933 and 1935 than in either the South or West. The eastern district reported 31,986 employees in the low-wage brackets in 1933 and 13,162 in 1935, a decline of 59 percent. The southern district reported 50,099 low-wage employees in 1933 and 45,395 in 1935, a decline of 9 percent. In the western district the number of employees reported declined from 73,455 to 58,524 between the two periods, or by 20 percent. In the eastern district 6.4 percent of all employees were in the low-wage brackets in 1933 and 2.8 percent in 1935. The corresponding percentages in the southern district were 23.6 in 1933 and 21.9 in 1935 and for the Western district 17.4 in 1933 and 13.2 in 1935. The proportion in the western district was influenced to a large extent by the high percentage reported by the southwestern region of that district.

In both periods the low-wage employees in the Eastern dis-

[1] Including switching and terminal companies.

[2] Basic rates in the 1933 payroll period studied were 10 per cent higher than actual rates.

trict were concentrated nearer the upper limits of the low-wage scale than were the corresponding employees in the South or West.

Data for 1935 were tabulated by region as well as by district. Little variation was found in the proportion of low-wage employees in the three regions of the eastern district.

The Western district, including as it does both northern and southern roads reported a relatively high percentage of low-wage employees. These employees however, tended to be concentrated in the Southwestern region. Nearly 25 percent of all employees in the latter region received 35 cents an hour or less or equivalent rates in 1935 and only 5.1 percent in the Northwestern region and 13.7 percent in the Central West.

Two regions, the Pocahontas and the Southern, make up the Southern district. They differ markedly in the proportion of low-wage employees, since the Pocahontas region reported only 4.3 percent in 1935 and the Southern region 28.0 percent. The latter percentage was the highest in any region. In part the high percentage of low-wage employees in southern territory was due to the coincidence of the peak month in the employment of maintenance of way forces with the time for which the count was made.

Low-Wage Employees by Occupations

About 92 percent of the employees reported in both periods were found in 13 of the 128 occupations or "reporting divisions" in which railroad employees are classified by the Interstate Commerce Commission. These occupations were:

Telephone-switchboard operators and office assistants
Messengers and office boys
Janitors and cleaners
Extra-gang men
Section men
Maintenance-of-way laborers (other than track), gardeners and farmers
Coach cleaners
Classified laborers (shops, engine houses, power plants)
General laborers (shops, engine houses, power plants)
General laborers (stores, ice, reclamation, timber treating plants)
Truckers (stations, warehouses, platforms)
Waiters, camp cooks, kitchen helpers
Crossing-and-bridge flagmen and gatemen

Of the 155,540 low-wage employees reported for the 1933 payroll period, about 86,000, or 55 percent were section men and extra-gang men. In the 1935 payroll period studied employees in these occupations numbered nearly 67,000, or 57 percent of the 117,000 low-wage employees reported. Classified and general laborers and crossing-and-bridge flagmen and gatemen ranked next in the number which they contributed to the total of low-paid employees. More than four-fifths of all messengers and office boys and more than two-thirds of all waiters, camp cooks and kitchen helpers were found in the low-wage brackets in both payroll periods but the total number of employees in these occupations is small.

In the Southern and Western districts for both the 1933 and 1935 periods most of the low-wage employees reported were unskilled manual workers. In the Eastern district, although a number of unskilled manual workers were reported in 1933, most of the low-wage employees were found in occupations such as crossing-and-bridge flagmen and gatemen, messengers and waiters, camp cooks and kitchen helpers. If the count had been made for the peak month of maintenance work in the East, the proportion of low-wage manual workers in the East probably would have been higher.

Hours of Low-Paid Employees

The respondent roads also reported the prevailing work period for the low-wage employees in the data for the payroll periods nearest November 1 in 1933 and 1935. In 1933, 45 percent of the employees reported were scheduled for over 40 to 48 hours per week, 38 percent for 40 hours or less and 17 percent for more than 48 hours per week. In 1935 the proportion of low-wage employees on an over-40 to 48-hours-a-week basis increased to 57 percent. Employees working on a schedule of 40 hours or less declined to 25 percent, while the proportion scheduled for more than 48 hours remained almost the same at from 17 to 19 percent.

In addition to the prevailing work period, the 1935 data showed the actual hours worked by the low-wage employees during the payroll period studied. Of the principal low-wage occupations, crossing-and-bridge flagmen and gatemen worked the longest hours, averaging 50 per week, and extra-gang men the shortest hours, averaging 38 per week. There was little significant difference in the average hours worked in different sections of the country for any given occupation.

The decrease in short time between the two periods studied caused an increase in the weekly earnings of the low-wage employees reported. Even in 1935, however, their earnings averaged less than full-time earnings. Employees paid 30 to 35 cents an hour, for example, whose full-time earnings for a 48-hour week would be between $14.40 and $16.80 actually averaged $13.24 per week. The average earnings of all employees reported for the 1935 payroll period amounted to $12.04 per week.[1]

Employees Who Received Free Housing

Since payments in kind sometimes supplement the earnings of railroad employees, the railroads were asked to report the number of low-wage employees who received free housing. Slightly less than 15 percent of the reported employees received free housing in 1933 and slightly more than 15 percent in 1935. With few exceptions the employees who received free housing worked for Southern or Western railroads, and nearly all were section men and extra-gang men.

The rates of pay of more than three-fourths of the reported employees in both periods were fixed by agreement. The proportion was somewhat greater in the upper ranges of the low-wage scale than in the lower and was slightly larger in 1935 than in 1933.

Estimated Cost of Establishing Wage Minimums

The large number of employees reported as receiving 35 cents an hour or less in 1935, even after the restoration of the 10 percent payroll deduction, suggests the desirability of some minimum limits to the wages paid. The cost of applying minimums of $12, $13, $14 and $15 per week was therefore estimated. A minimum wage of $15 applied to all Class I railroads would cost annually about $9,000,000 or six-tenths of one percent of the annual payroll, based on the rates received for the payroll period nearest November 1, 1935.

Long Hours Irrespective of Rates of Pay

The question of reducing hours has assumed such importance that it was thought desirable to include a study of the hours worked by all employees who were on duty more than 48 hours per week or more than 8 hours per day, irrespective of the rate of pay received. A questionnaire was submitted to the same railroads covered in Part I to ascertain this information. Executives and train- and engine-service employees were not included in this portion of the study. There is no adequate record of the hours worked by the first group of employees and the second group is paid according to a dual system of mileage rates and daily minima—a system of wage payment which makes it difficult to compare hours worked. The questionnaire called for regularly scheduled hours of work so that overtime hours or short time, other than scheduled short time, was not shown.

Excluding the executive and train- and engine-service groups, it was found that 110,250 employees during the payroll period nearest May 1, 1934 worked more than 48 hours per week. This number constituted 12.5 percent of total employment in the occupations included in the study. About 40,000 were reported who worked over 8 hours per day. Since it is unlikely that many of the latter worked less than 48 hours at least two-thirds of the employees reported as on duty more than 48 hours per week must, therefore, have worked on a 7-day schedule.

Long-hour schedules, that is, those involving more than 48 hours per week, were more prevalent in the South and West than in the East. About 9 percent of the employees in the Eastern district worked long hours, about 16 percent in the Southern district and about 15 percent in the Western district. In all districts in the country, hours in excess of 56 per week were found to be the exception. Over three-fourths of the long hours employees reported worked from 49 to 56 hours per week.

Long hours were most common among general foremen en-

[1] Excluding certain employees whose earnings were reduced by voluntary absence, sickness, or other similar causes, or who received a large proportion of their earnings as gratuities.

gaged in maintenance of way and of equipment and stores, station agents, and telegraphers, switchtenders, police, watchmen, camp cooks, waiters and janitors. Although a number of long-hours employees were reported in other occupations, they did not constitute a large proportion of the total employment in those occupations. It is estimated that employees who worked more than 48 hours per week averaged 58 hours per week during the period studied while employees working 48 or less averaged only 37 hours per week.

Many of the long-hours employees were in low-wage occupations as well so that a revision of hours downward would materially decrease earnings that are already low. If it were possible to limit the work week to 48 hours, a rough estimate on the basis of the hours worked during the payroll period nearest May 1, 1934, indicates that more than 20,000 new railroad jobs could be created. There are many difficulties in arriving at satisfactory hours adjustments, however, and this estimate might have to be considerably modified in the light of actual experience.

Comparison of Average Hours and Compensation Per Week of Low-Wage Employees and of All Employees, in Selected Low-Wage Occupations

Occupation	Low-wage employees payroll nearest[1] Nov. 1, 1935		All employees[2] Oct., 1935	
	Hours	Compensation	Hours	Compensation
Telephone-switchboard operators and office attendants	46	$12.84	41	$17.30
Messengers and office boys	43	11.52	[3]	12.77
Janitors and cleaners	42	11.97	44	16.30
Extra-gang men	35	9.08	31	10.55
Section men	37	10.63	37	13.30
Maintenance-of-way laborers (other than track) gardeners, farmers	40	10.82	38	14.32
Coach cleaners	48	14.39	45	18.66
Classified laborers (shops, engine houses, power plants)	44	13.33	44	18.28
General laborers (shops, engine houses, power plants)	42	12.52	41	15.30
General laborers, (stores, ice, reclamation, timber treating plants)	41	12.47	41	18.57
Truckers (stations, warehouses, platforms)	39	11.13	36	16.77
Waiters, camp cooks, kitchen helpers	48	12.03	46	13.39
Crossing-and-bridge flagmen and gatemen	48	14.12	[3]	15.54

[1] Averages for all low-wage employees reported.

[2] Computed from sum of straight time and overtime hours and compensation and the number of employees who received pay during the month of October, 1935—I.C.C. *Wage Statistics.*

[3] Employees in these occupations are reported on daily basis.

Employees paid on a weekly or monthly basis averaged more than the hourly- and daily- paid employees in all except the lowest wage brackets. The average earnings of all weekly and monthly low-wage employees was $13.45 a week, while the average earnings of all the low-wage employees reported was $12.04 a week. The higher earnings of low-wage employees paid on a weekly or monthly basis coincides with longer average hours worked per week. All employees paid on this basis averaged 50 hours per week while hourly- and daily- paid employees averaged only 40 hours.

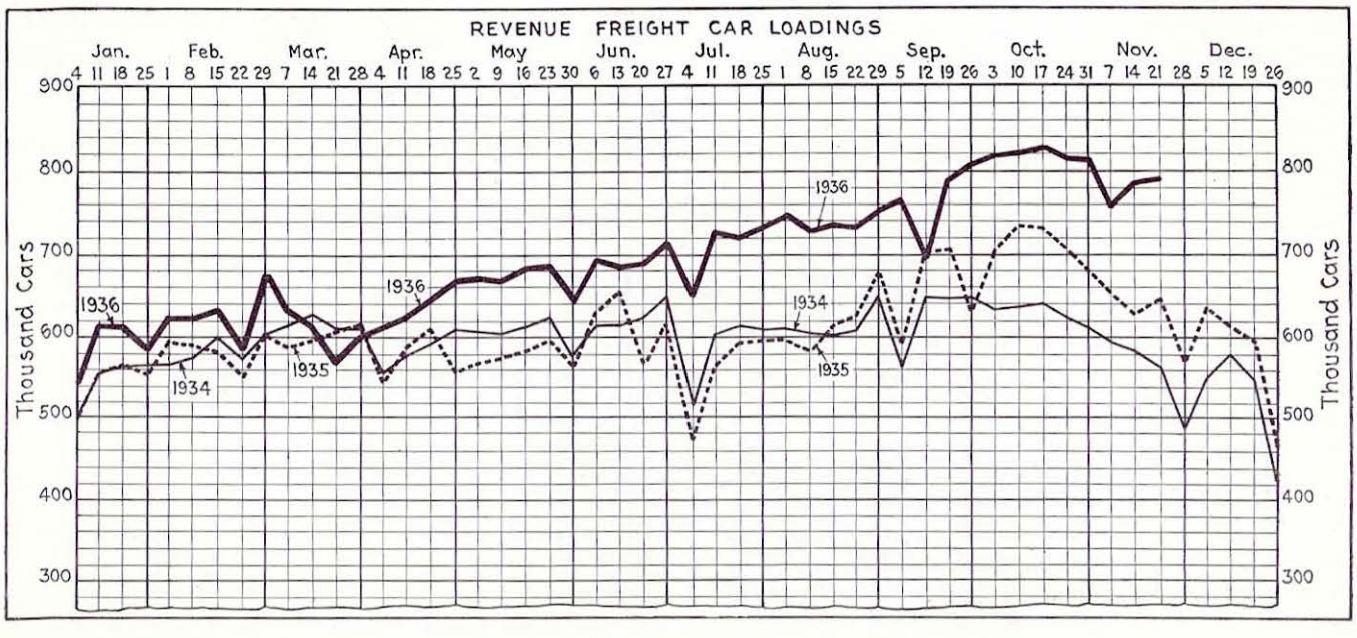
In Table 6, all the low-wage employees reported for the 1935 payroll period have been combined in order to compare average hours and compensation of employees in low-wage brackets with the average hours and compensation of all employees in these occupations irrespective of the rates of pay which they received. A comparison of data shows that the inclusion of employees who lost time because of voluntary unemployment, sickness or accident or who received a large part of their earnings as gratuities in the low-wage group decreases both average hours and earnings by from 5 to 10 percent.

Two important low-wage occupations, messengers and office boys, and crossing-and-bridge flagmen and gatemen, were not included in the hours comparison because employees in these occupations are reported to the Interstate Commerce Commission on a daily rather than an hourly basis. In general, the hours of employees receiving 35 cents an hour or less do not differ greatly from the hours of all employees in these selected occupations.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading for the week ended November 21 totaled 789,500 cars, an increase of 4,828 cars or six-tenths of one per cent above the preceding week, and an increase of 141,576 cars or 21.9 per cent compared with the corresponding week in 1935, and 88,450 cars or 12.6 per cent above the corresponding week in 1930. All commodity classifications except live-



stock and ore showed increases over the preceding week and all commodity classifications showed increases over last year. The summary as compiled by the Car Service Division, Association of American Railroads, follows:

Revenue Freight Car Loading

For Week Ended Saturday, November 21

Districts	1936	1935	1934
Eastern	168,497	144,526	122,121
Allegheny	158,680	123,833	107,783
Pocahontas	56,532	46,778	40,602
Southern	113,629	92,426	85,888
Northwestern	99,826	80,621	68,437
Central Western	124,164	102,389	86,894
Southwestern	68,172	57,351	50,217
Total Western Districts	292,162	240,361	205,548
Total All Roads	789,500	647,924	561,942
Commodities			
Grain and Grain Products	36,894	33,370	27,959
Live Stock	19,346	15,412	19,159
Coal	164,340	132,537	120,270
Coke	11,294	7,843	4,761
Forest Products	36,417	28,562	20,168
Ore	26,430	11,837	3,650
Merchandise L.C.L.	169,731	160,879	159,103
Miscellaneous	325,048	257,484	206,872
November 21	789,500	647,924	561,942
November 14	784,672	629,728	585,034
November 7	759,318	654,947	594,790
October 31	814,175	681,998	613,048
October 24	815,972	710,621	624,808
Cumulative Total, 47 Weeks	32,607,705	28,609,734	28,252,206

Car Loading in Canada

Car loadings in Canada for the week ended November 21 totaled 51,521, as against 53,606 for the previous week and 48,983 in the corresponding 1935 week, according to the Dominion Bureau of Statistics.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
November 21, 1936	51,521	28,094
November 14, 1936	53,606	26,631
November 7, 1936	56,860	26,847
November 23, 1935	48,983	22,593
Cumulative Totals for Canada:		
November 21, 1936	2,244,626	1,100,645
November 23, 1935	2,144,830	1,002,613
November 24, 1934	2,117,302	1,004,735

Railway Purchases—9 Months

A TOTAL of approximately $67,500,000 was spent by the Class I railroads for fuel and materials and supplies in the month of September, according to figures which have been compiled by the *Railway Age* from special reports received from carriers. Of this amount, approximately $47,000,000 represented materials and supplies from manufacturers, while $20,500,000 was spent for coal and fuel oil. These figures are exclusive of equipment purchased from builders and also materials supplied by construction contractors. The September total from manufacturers was a gain of about $5,000,000, or 11 per cent, over August, a 60 per cent increase over September, 1935, and equalled the total for September, 1930. Expenditures for rail, crossties and fuel were all greater than in September a year ago.

Railway buying of materials and supplies, fuel and equipment in September brought the total for the 9 months' period to approximately $682,000,000, including $384,000,000 of materials and supplies purchased from manufacturers and $114,120,000 of cars and locomotives ordered from manufacturers—a total of about $500,000,000 from manufacturers. The fuel total for the 9 months was about $183,000,000.

The total business with manufacturers for the 9 months was smaller by approximately $230,000,000, or 30 per cent, than the 9 months' total in 1930 and smaller by $630,000,000, or 51 per cent, than the 9 months' total of 1929, but showed an increase of 65 per cent over the business transacted with manufacturers in the first 9 months of 1935. The value of orders placed with builders for locomotives and cars in the 9 months' period was greater by about $84,000,000 than the total for the 9 months of 1935, and fell short of the corresponding figure in 1930 by only $27,000,000, or about 19 per cent.

Purchases of Material and Supplies—Class I Roads* September

	Fuel (000)	Rail (000)	Crossties (000)	Other Material (000)	Total (000)	Total less Fuel (000)
1929	$28,512	$3,129	$12,848	$61,511	$106,000	$77,488
1930	24,487	1,427	8,667	37,019	71,600	47,113
1931	18,133	1,572	3,092	26,203	49,000	30,867
1932	13,400	545	2,400	16,155	32,500	19,100
1933	16,450	722	2,680	22,719	42,571	26,121
1934	16,631	1,193	3,620	27,472	48,916	32,285
1935	15,610	1,230	2,650	25,510	45,000	29,390
1936	20,557	2,185	3,933	40,919	67,594	47,037

* Subject to revision.

Railway Purchases—9 Months*

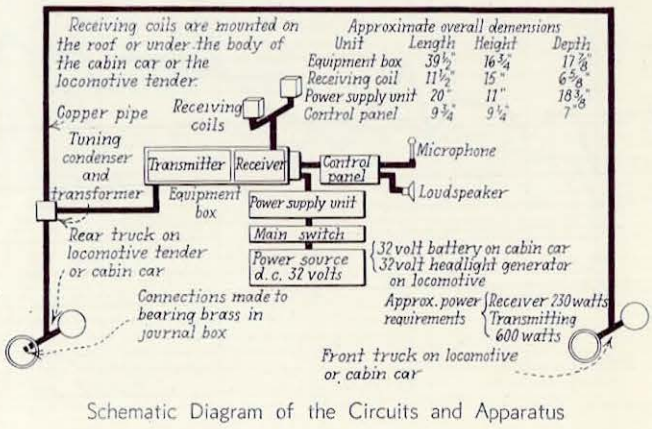
	Materials and supplies ex. fuel (000)	New equip. (000)	Total from mfrs. (000)	Total inc. fuel (000)
1929	$725,189	$303,037	$1,028,226	$1,283,137
1930	595,559	141,970	737,529	971,970
1931	372,731	43,957	416,688	598,957
1932	206,800	2,667	209,467	340,867
1933	185,720	5,027	190,747	324,137
1934	319,875	83,277	403,152	557,848
1935	272,730	30,097	302,827	474,647
1936	384,840	114,120	498,960	682,403

* Subject to revision.

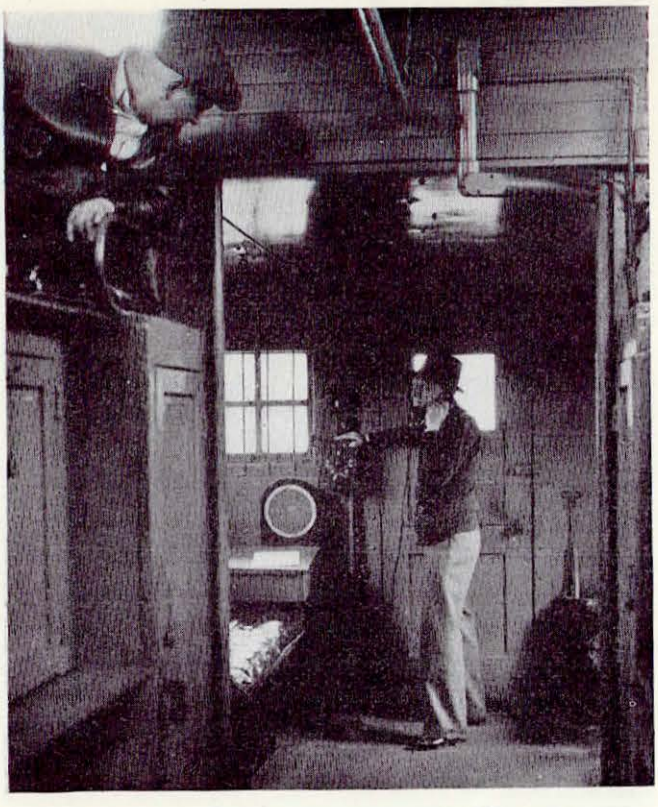
Train Communication System

A TRAIN communication system, developed for the purpose of providing two-way telephone communication between the ends of a freight train, between trains and stations, between trains and towers, and between different trains on the same or on adjacent tracks, is announced by the Union Switch & Signal Company, Swissvale, Pa. This new system is also applicable to yard uses and is said to be equally flexible in hump yard operation and in flat yard work.

The Union train communication system is a "private" system of communication in that it cannot be tuned in by commercial radio receiving sets. The manufacturer states that the system can be installed and operated without a license from the Federal Communications Com-



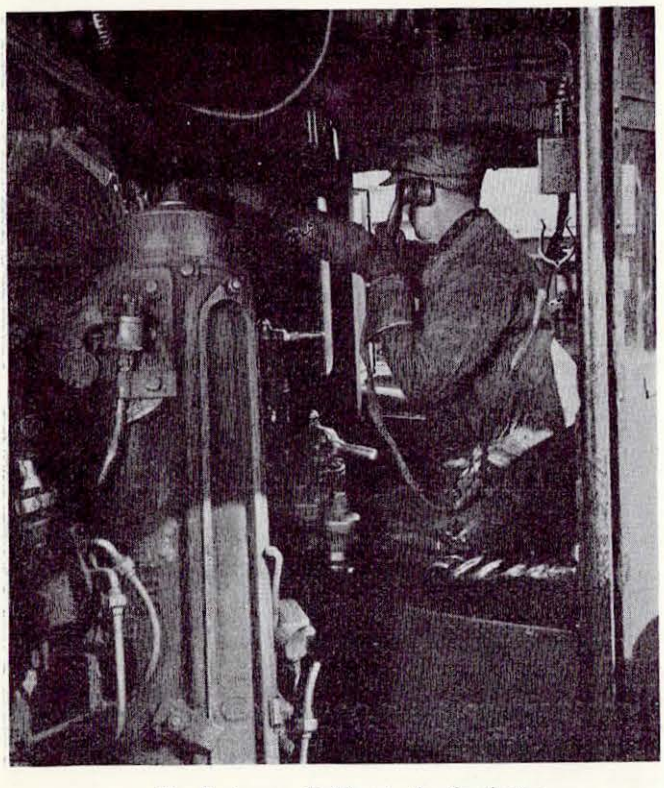
Schematic Diagram of the Circuits and Apparatus



A Trainman Can Communicate with the Engineman

mission and may be used with the same ease and simplicity as the ordinary commercial telephone. The type of control used insures a high degree of continuous communication, regardless of physical conditions.

The train communication apparatus at each end of the train consists of a transmitter, with coupling directly to the track, and a receiver which is connected to the receiving coils placed on the roof of or under the body of the vehicle. The equipment box containing the transmitting and receiving equipment is about the size of a standard train control equipment box, the over-all length being 39½ in.



The Engineman Talking to the Conductor

The power required for the operation of the vacuum tubes used in both the receiver and transmitter is obtained from a 32-volt battery on the cabin car and from a 32-volt headlight generator on the locomotive. The power requirements are approximately 230 watts during receiving and 600 watts during sending.

When a trainman desires to speak to a member of the crew at the other end of the train, he first sends a calling signal, which is produced by pressing a button on the control panel. This calling signal is a high-pitched note which is heard in the loud-speaker. Where desirable, a calling signal may be used to operate a bell instead of the loud-speaker. After the signal has been sent, the sender removes the microphone from its support and presses a button on the microphone handle when he speaks into the microphone. When a reply is being received from the other end of the train, this button is released. The pressing of the button applies the plate voltage to the transmitter tubes and removes the plate voltage from the receiver tubes, so that the high power, which is present in the neighborhood of the receiver during sending, does not affect it. When the microphone is hung upon its hook, the apparatus is in the receiving condition.

The system may be arranged to establish communication from end to end of the same train regardless of whether it is moving, standing still, or parted. The system may also be used for communication between trains and adjacent towers, and between trains near one another on the same or adjacent tracks. Thus, it is claimed that the system provides distinct advantages in the operation of trains in that all activities may be coordinated under the direction of the conductor; the chance of misunderstood hand signals is eliminated; the entrance to, and departure from, yards is expedited; greater efficiency and safety are provided in special switching moves; and a means is provided for notifying the engineman of unsafe conditions enroute. In addition, communication is private since it cannot be tuned in by ordinary radio sets, no license is required from the Federal Communications Commission for operation of the system, and physical and weather conditions do not interfere with its proper operation.

A Renaissance of Railroading

(*Continued from page 820*)

posed upon the railroads for social security and to provide pensions for their employees. Nevertheless they are recovering. In the first nine months of this year their gross earnings increased 17 per cent, their operating expenses 13 per cent, their taxes 27 per cent, and their net operating income 36 per cent.

Encouraged and aided by this increase in net operating income, and confronted by demands for more and better service, they have increased their purchases of equipment and materials from the manufacturing industry 65 per cent. The increase in their purchases from manufacturers is making a large contribution to recovery and employment throughout the country and can make a much greater contribution. Public sentiment toward them is more friendly than within thirty years. Let us hope that this sentiment will prevent action by government or business that will arrest the railroad renaissance and, on the contrary, will cause action that will stimulate it by promoting recovery of absolutely essential railroad earning power and credit.

Communications and Books . . .

Wants Information About Norris Locomotives

MONTEVIDEO, URUGUAY.

TO THE EDITOR:

The writer is preparing a monograph on the Norris locomotives—especially in relation to those built for England and Europe—and would appreciate it very much if anyone possessing data bearing on the early engines built by W. Norris & Co., particularly of the 4-2-0 and 4-4-0 types, would kindly communicate with him.

The writer possesses most of the early works on this locomotive published in the U.S.A., including Hodge's "Steam Engine" of 1840, Norris's "Handbook" of 1852, Harrison's "The Locomotive Engine & Philadelphia" of 1871-72, and Brown's "First Locomotives in America" of 1872-74, and is also aware of what has been published in the U.S.A. during the present century by Angus Sinclair, Snowden Bell and others, so that what is sought is information of any possible unpublished data or of anything which may have been published during the period 1850-1900 of which the writer may not have knowledge. English and European sources he has access to.

Unquestionably the export of Norris engines to Europe in the early days of locomotive development was an interesting and outstanding occurrence never thoroughly dealt with as a whole, and having been fortunate enough to have access to certain important contemporary records on that side bearing on the subject, the writer wishes to incorporate all possible sources of information on the U.S.A. side also.

P. C. DEWHURST,
Chief Mechanical Engineer,
Central Uruguay Railways.

Arthur C. Needles

HARTFORD, CONN.

TO THE EDITOR:

Arthur C. Needles, President of the Norfolk & Western, passed away at Roanoke, Va., October 26, after 53 years continuous service. The writer knew him when he was a track supervisor on the Pocahontas division under N. D. Maher, division superintendent. Needles was a nephew of the president's wife, but he had to begin at the bottom as a clerk, then became track supervisor.

He was a husky young man, with a cheerful grin, and in all the years I never knew him to appear discouraged, or wear any other than a sunny countenance. His boss, Nick Maher, a red haired, jolly fellow, was superintendent of the hardest division of the N. & W. At that time the Pocahontas coal field was new, the mining region rough and tough, and around there people who desired to live long went to bed early with closed shutters, while outside could be heard the occasional pop of a gun. Whistle posts along the track were pitted with bullets, police arrangements were scanty, and many carried firearms. It was a pioneering day. A little to the west, the Hatfield-McCoy feuds kept up the excitement. It was years before that region became comfortable to live in.

When the president came along in his private car, Needles would join the party and travel over the division. Arthur especially favored our "civilized grub." He enjoyed the strenuous life. If the train stopped, and the stream looked inviting, he would strip and take a swim, and I have known him to do it thrice in a day. We shared adjoining bunks in the car, and he would go through setting up exercises before bed, and on getting up. He was always kindly, dependable, companionable and efficient.

Starting as clerk, he was in turn supervisor, train dispatcher, division superintendent, general manager and president, and saw the road grow from 475 to 1100 miles of main line, with more than half the increase new construction, through new country.

Needles was not only a proof of American opportunity for those who conscientiously strive; he was himself the fruitage of a character rooted in integrity and worth. Such characters in time reach the high levels, and all over the country are men who knew Mr. Needles, who value him in their respect, and hold him dear in their hearts. His monument is part of the timber and steel and reputation of a great railroad which serves myriads every day in food, factories and fruitful living.

J. S. STEVENS

New Books

Dictionary of Mechanical Engineering Terms. By J. G. Horner, A. M. I. M. E., and E. H. Sprague, formerly M. I. M. E. and A. M. Inst. C. E. Published by the Technical Press, Ltd., 5 Ave Maria Lande, Ludgate Hill, E. C. 4, London, Price, 12 s. 6 p.

The Appendix to this sixth edition of the (British) Dictionary of Mechanical Engineering Terms, comprising approximately eight thousand definitions of terms used in the theory and practice of mechanical engineering, has been enlarged to include several hundred additions relating to the advances in engineering practice. Only terms of universal, or of moderately wide application are defined.

Universal Directory of Railway Officials and Railway Year Book, 1936-1937. Compiled from official sources under the direction of the editor of the Railway Gazette (London). 602 pages, 8½ in. by 5½ in. Bound in cloth. Published by the Directory Publishing Company, Ltd., 33 Tothill street, Westminster, London, S. W. 1, England. Price 20 shillings.

This is the forty-second edition of the Universal Directory and the fourth in which it incorporates the Railway Year Book. The general plan of the book remains the same as in previous years with the lists of railway officers and other data brought up to date. Also there is included a chronological list of outstanding events in railway history, along with the latest data on the world's railway mileage and the status of electrification. As usual there are the convenient indexes for ready reference—the general index, the index to countries, and the personal index of railway officers. The announcement calls attention to the fact that the present edition covers "many important overseas changes in organization during the year" such, for example, as the nationalization of the Turkish railways.

Analysis and Design of Steel Structures, by Almon H. Fuller, professor and head of the department of civil engineering, and Frank Kerekes, professor of structural engineering, both of Iowa State College. 6 in. by 9 in., 627 pages. Bound in cloth. Published by D. Van Nostrand Company, Inc., 250 Fourth avenue, New York. Price $5.

Prepared for the use of students in undergraduate courses in structural engineering, this book will be of use also to the man who wishes to pursue independent study or who has need for a reference book in this field. The evident objective of the authors was to provide a thorough exposition of the fundamentals, for example, of the frame structure and the beam, and to follow this with a survey of the entire field. The text matter not only covers the properties of riveted and welded joints, factors affecting the strength of wood, the behaviour of steel beams in tests to destruction, the design of mill buildings, steel railway bridges and tall office buildings, but covers as well the theory of statically indeterminate structures, secondary stresses, etc., and the economics of simple span bridges. To do all this in a book of 627 pages, in which 90 pages are occupied by specifications, necessarily implies a condensed treatment of many of the subjects. Excellent drawings, including reproductions of a number of shop drawings, and the interspersing of illustrative problems add to the value of the book for one who wishes to pursue a course of self instruction.

Odds and Ends . . .

First Aid

More than 24,000 employees on the London, Midland & Scottish railway of England have passed tests qualifiying them to render first aid service.

Why?

It has also seemed strange to us that freight moving in a box car should be called a SHIPment, whereas freight moving in a ship is called a CARgo.

Railroader-Flyer

H. D. Minor, general attorney for the Illinois Central at Memphis, Tenn., claims to be the first railroader to have crossed the Atlantic on a dirigible. He rode the Hindenburg across the ocean on August 9.

Smallest Railroad

NORFOLK, VA.

TO THE EDITOR:

I note in a recent issue a reference to the "Smallest United States Railroad." This refers to the Pioneer & Lafayette, which you state is 13 miles long. The Warrenton Railroad is listed as being three miles long and having one locomotive, one freight car and one passenger car.

E. A. FRINK
Engineer of Bridges, Seaboard Air Line.

Believe It Or Not

Snakes have recently given two railroad men the scare of their lives. Southern Pacific Signalman Bill Gleason's motor car ran over a small tumble weed on the track and a big rattlesnake was thrown up around his neck in some unexplained manner. Alfred Naylor, a shop worker, sat down at home one evening to enjoy his radio but it refused to work when he turned the switch. Looking inside, he saw what appeared to be a stocking wrapped around one of the tubes. When he tried to remove it he was bitten by a 36-in. bull snake. Next time his radio gets out of commission he is going to call Frank "Bring-Em-Back-Alive" Buck to fix it.

Psychic Interlocking

In India there is a large lumber company that has diminutive locomotives to pull trains of logs along its narrow-gauge railway to its mills. The logs are brought in from three different directions and the three lines converge into the main line. At the point of convergence there is a stub switch directing the wheels of the train on to the main line. An elephant is employed at this switch as the switchman. His work is so reliable that he requires no direction from man. Each of the different lines converging into the main line is designated by a disc of a different color from the others, but of the same size. One is white, another is black, and the third is red. The switch has three positions, and these positions are designated by discs of corresponding colors. When the elephant sees the locomotive coming down the main line, he throws the switch to correspond with the disc on the engine and the train travels over the track intended for it. According to eye-witnesses, the elephant is so delighted when the train passes him that he often throws up his trunk and makes a tremendous noise as if for sheer joy of accomplishment.—DUMB ANIMALS.

Railwaymen Doctors

ST. LOUIS, MO.

TO THE EDITOR:

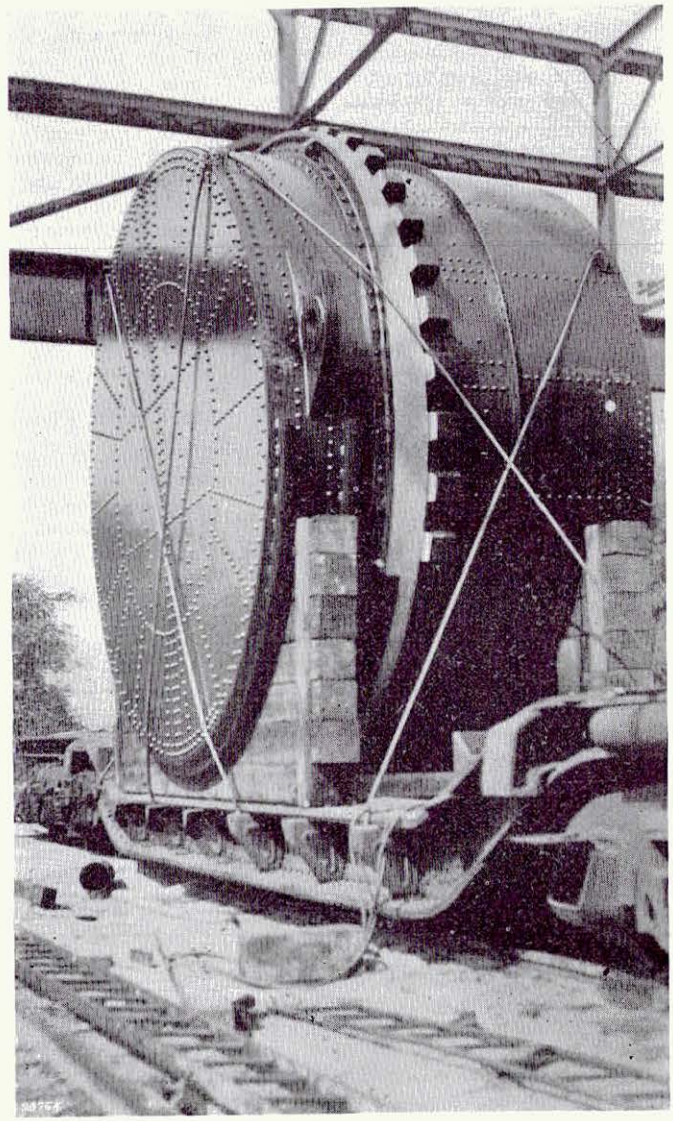
Our attention has been called to an article appearing in the October 31 issue of the *Railway Age* which stated that John H. Cavins, engineman for the Chesapeake & Ohio, was probably the only engineman in the country who has also had a career as a practicing physician. The Cotton Belt has working out of Pine Bluff, Ark., as a regular freight conductor, R. C. Allen, better known as "Doc." Some three or four years ago he was granted a leave of absence and for a year or more practiced medicine in the vicinity of DeWitt, Ark. He is a graduate of an accredited medical school. Also there is a practicing chiropractor in Pine Bluff, Dr. J. E. Shackelford, a graduate chiropractor, who holds seniority with this company in the capacity of locomotive engineer, and so served for many years. He was granted a leave of absence on August 1, 1933, and his seniority date as locomotive engineer is February 16, 1917.

A. C. MCKIBBIN
Director of Development, St. Louis Southwestern.

Huge Drum

Here's a case of "low bridge," and a cargo that couldn't duck. The accompanying photograph shows one of 20 end drums for the roller gates in No. 5 and No. 7 Mississippi flood control dams that were fabricated at the Leetsdale shops of the Bethlehem Steel Company.

They were shipped from Leetsdale to Winona and Dresbach, Minn., in this type of Pennsylvania depressed car. The over-all



An Unusual Shipment Safely Handled by Rail

diameter of the two types of drums included in the shipments was 16 ft. 8 in., but as loaded on the depressed cars each cargo measured 19 ft. in height from the top of the rails. And getting the drums to their destination was mostly a problem of working out a route that had no bridges low enough to interfere with their passage.

NEWS

Truckers Are Required to Issue Expense Bills

I.C.C. finds many present records insufficient for check on adherence to tariffs

It has come to the attention of the Interstate Commerce Commission that many common carriers of property subject to the motor carrier act do not issue freight or expense bills at the time when shipments are received for transportation (if prepaid) or delivered at destination (if collect), and do not show on bills of lading and freight or expense bills information sufficient to enable consigners, consignees, and the commission's representatives to ascertain whether the transportation charges demanded or collected are those provided by the carriers' tariffs lawfully on file with the commission. For this reason the commission on November 25 entered an order which requires each common carrier of property subject to the motor carrier act to issue freight or expense bills when transportation charges are collected, and to show on the face of all bills of lading and freight or expense bills which it issues the information specified in the order.

Common carriers who fail to comply with the requirements of this order may be subjected to prosecution and the penalties provided by Section 222 of the act.

The order requires that every common carrier by motor vehicle subject to the jurisdiction of the commission shall, on and after January 1, 1937, cause to be shown on the face of each and every receipt or bill of lading issued for the transportation of property by such carrier in interstate or foreign commerce, information which shall include the names of the consignor and consignee; the points of origin and destination; the number of packages, description of the articles, and weight, volume or measurement (if the lawfully applicable rates or charges are published to apply per unit of weight, volume or measurement) of the property received; and that a record of this information be kept by the carrier by the preservation of a copy of such receipt or bill of lading.

It is further ordered that every such carrier shall, when collecting transportation charges, issue a freight or expense bill covering each shipment, and the original of such freight or expense bill shall be receipted on payment of the transportation charges and furnished to the shipper or the receiver; and shall cause to be shown on the face thereof the names of the consignor and consignee (except that as to reconsigned shipments the freight or expense bill shall not show the name of the original consignor); the date of shipment; the points of origin and destination (except that as to reconsigned shipments the freight or expense bill shall not show the original shipping point unless the final consignee pays transportation charges from such original shipping point); the number of packages, description of the articles, and weight, volume or measurement of the property transported (if the lawfully applicable rates or charges are published to apply per unit of weight, volume or measurement); the exact rate or rates assessed; the total charges to be collected including a statement of the nature and amount of any charges for special service and the points at which such special service was rendered; the route of movement indicating each carrier participating in the transportation service, and the transfer point or points through which the shipment moved; and that a record of this information be kept by the preservation of a copy of such freight or expense bill.

Mechanical Division 1937 Convention

The General Committee has approved the dates of June 16 to June 23, inclusive, for the 1937 convention at Atlantic City, N. J., of the Mechanical Division of the Association of American Railroads. The Railway Supply Manufacturers' Association now has plans under way for holding simultaneously an exhibition of railway equipment and specialties—the first to be held in seven years.

Air-Express in October

Another monthly record for air express shipments was set in October when 51,582 packages were handled by the Air Express division of the Railway Express Agency. This represents an increase of 59 per cent over the business handled by the Express Agency's contract air lines during October, 1935. For the nine months' period February to October, inclusive, the increase over last year has been 64.5 per cent.

New Twin Zephyrs in Service on December 18

The six-car Twin Zephyrs, being constructed for the Chicago, Burlington & Quincy by the Edward G. Budd Manufacturing Company and to be hauled by 1,800-hp. Diesel-electric locomotives built by the Electro-Motive Corporation, will be placed in service between Chicago and the Twin Cities on December 18, when the present three-car Zephyrs, which have been in the Twin Cities service since April, 1935, will be assigned to other service.

$88,477,459 October Net for 130 Railroads

Advance reports representing 98.4 per cent of total revenues made public by A. A. R.

Advance reports from 130 Class I railroads, representing 98.4 per cent of total operating revenues, made public by the Association of American Railroads, show that those roads in October had a net railway operating income of $88,477,459, compared with $74,043,657 in the same month last year, an increase of 16.4 per cent. Operating revenues of the 130 Class I railroads totaled $385,421,543, compared with $335,644,700 in October, last year, an increase of 14.8 per cent. Operating expenses of the same roads in October totaled $257,284,138, compared with $229,218,391 in October, last year, a 12.2 per cent rise.

The 56 Class I railroads in the Eastern district, according to complete reports, had a net railway operating income in October of $45,307,472, compared with $37,420,639 in October, last year. Twenty six Class I railroads, representing 98.9 per cent of the total revenues in the Southern district, had a net railway operating income of $9,380,659 in October, compared with $7,110,694 in the same month one year ago, while 48 Class I railroads, representing 96.4 per cent of the total revenues in the Western district, had a net railway operating income of $33,789,328 in October, compared with $29,512,324 one year ago.

Operating revenues of the 56 railroads in the Eastern district amounted to $192,270,382 in October, this year, compared with $164,782,255 in the same month one year ago, an increase of 16.7 per cent. The 26 railroads in the Southern district had operating revenues in October, this year, of $46,023,627 compared with $39,452,802 in October, last year, an increase of 16.7 per cent, while the 48 railroads in the Western district had operating revenues amounting to $147,127,534 in October compared with $131,409,643 in the same month one year ago, an increase of 12 per cent.

Operating expenses in October of the same roads in the Eastern district totaled $126,787,482 compared with $111,021,374 in October one year ago or an increase of 14.2 per cent. In the Southern district the roads had operating expenses totaling $32,530,671 in October compared with $29,318,196 in October, last year, an increase of 11 per cent, while the roads in the Western district which have reported so far showed operating expenses of $97,965,985 for October compared with $88,878,821 an increase of 10.2 per cent.

$310,176,399 of Loans Repaid to Government

25 railroads have now settled in full for advances made by R. F. C. and P. W. A.

Of approximately $700,000,000 loaned to railroads by the Reconstruction Finance Corporation and the Federal Emergency Administration of Public Works, $310,176,399 has been collected by the government, either through repayments by the railroads or by public sales of the railroad securities which have netted the federal government a premium of $4,491,550, according to a statement issued on November 30 by Jesse H. Jones, chairman of the R. F. C. in which he announced that the New York Central had anticipated all of its remaining notes to the corporation including the collateral notes which the latter had purchased from the P. W. A. The New York Central, Mr. Jones announced, was the twenty-fifth railroad to pay its indebtedness to the R. F. C. in full, including five roads that had borrowed both from R. F. C. and P. W. A.

Nineteen of these roads had made repayments in full to the R. F. C. amounting to $145,571,874. According to the corporation's latest report a total of $623,519,795 of loans to 75 railroads had been authorized and $515,266,239 had been disbursed. The P. W. A. had also loaned $200,529,000 to 32 railroads. Chairman Jones' statement included the following:

The following is a list of the roads and the amount of their borrowings from the R. F. C. that have been paid in full:

New Orleans Public Belt	$6,000,000	
Central of New Jersey	464,299	
Great Northern	6,000,000	
Cincinnati Union Terminal	8,300,000	
Pennsylvania	28,900,000	
Wrightsville & Tennille	22,525	
Copper Range	53,500	
Litchfield & Madison	800,000	
Texas & Pacific	700,000	
Texas South-Eastern	30,000	
Birmingham & Southeastern	41,300	
Maine Central	2,550,000	
Missouri-Kansas-Texas	2,300,000	
New York, Chicago & St. Louis	18,200,000	
Pere Marquette	3,000,000	
St. Louis Southwestern	18,672,250	
Southern Pacific	22,000,000	
Tuckerton	39,000	
New York Central	27,499,000	
		$145,571,874.00

Railroad securities purchased from P. W. A. that have been paid or sold to private investors are as follows:

Lehigh & New England	$1,204,000	
Chesapeake & Ohio	15,938,000	
Northern Pacific	1,220,000	
Interstate	250,000	
Pennsylvania	70,165,000	
Grand Trunk Western	250,000	
Great Northern	5,785,000	
Delaware, Lackawanna & Western	4,652,000	
Southern Pacific	12,000,000	
New York, Chicago & St. Louis	4,809,000	
New York Central	6,969,000	
		123,242,000.00
		$268,813,874.00
In addition to the foregoing, 42 roads have made partial payments on their borrowings from the R. F. C., aggregating		31,443,975.00
and on loans from P. W. A. now held by the R. F. C. of		5,427,000.00
Premium received from sale of railroad securities		4,491,550.79
Total repayments, including premium		$310,176,399.79

The R. F. C. now has outstanding loans to 55 railroads, aggregating $412,026,890, including $66,976,500 bought from P. W. A. Of these roads, 23 are in receivership or trusteeship. Loans to these aggregate $163,811,686, but the security in most cases is considered good for the loan.

Aside from loans actually made and disbursed to railroads, the R. F. C. has authorized a number of loans that were not taken. The fact that the roads were able to get the money from the R. F. C. made it possible for them to borrow at their rates from private sources, Mr. Jones said. Prominent among these authorizations was one for $100,000,000 to the Great Northern to meet a like amount of 7 per cent bonds that matured July 1 of this year. The new 4 per cent issue was taken almost entirely by the stockholders of the road, and the little remaining was privately subscribed. Another authorization was for $13,946,097 to the Maine Central to enable it to meet a maturity on December, 1935. The bankers took and distributed this issue, which also bore 4 per cent. Commitments and conditional commitments at present outstanding aggregate $39,223,250. Some of this is to assist in meeting maturities and some to finance the purchase of new equipment.

Time for Filing Passenger Tariffs Extended

Commissioner Aitchison of the Interstate Commerce Commission has issued a sixth section permission order extending from January 1 to July 1, 1937, the date by which the railroads are required to cancel the blanket supplements and master conversion table tariffs authorized by special order last April to enable them to publish the reduced passenger fares ordered by the commission effective on June 1 on short notice. By July 1 under the present order the passenger fare tariffs must be brought into conformity with the commission's tariff rules.

Bond Committees for New York World's Fair

Gerhard M. Dahl, chairman of the board of the Brooklyn-Manhattan Transit Corporation, and William F. Cutler, president of the Southern Wheel Company, have been appointed, respectively, chairmen of committees for the transportation industry and the railway supplies industry, which will participate in the campaign to sell $27,829,500 of debenture bonds to finance the New York World's Fair. Similar volunteer groups are being organized in 68 trades and industries. The railway supplies and transportation industries, the announcement states, "are expected to benefit particularly from the Fair both as a result of the greatly increased traffic, which is anticipated during the spring and summer of 1939, and indirectly through the stimulation of all other businesses." The bond sales campaign opened on November 23 at a dinner in the Hotel Astor in New York.

N. H. Trolley Venture, It Seems, Was Unwise

I. C. C. investigators turn spot light onto ancient history at N. Y. hearing

Hearings in the Interstate Commerce Commission's investigation into the financial policies of the New York, New Haven & Hartford were held in New York this week, with Chairman Mahaffie presiding. The Commission's witness was Lewis F. Ormand, its chief accountant, who put into the record over 50 exhibits proporting to show losses of three kinds—"recorded," "constructive" and "potential"—suffered by the railroad as a result of its investment in non-railroad companies (principally trolley lines and steamships) prior to 1913.

"Recorded" losses were those taken from the company's accounts. "Constructive" losses were defined as the difference between the sums received by the New Haven in dividends from the properties in which its funds were invested and an annual return of 4 per cent on the sums so invested (the Commission's witness holding the view that these funds, if they had not been so invested, could have been used to reduce the road's funded debt on which it was paying an average rate of slightly higher than 4 per cent). "Potential" losses were described as the difference between the prices paid for securities in these companies and their market value as of 1935.

While not directly accusing the road of having borrowed money to pay dividends in 1931 and 1932, it was stated that "the dividends could not have been paid if the cash had not been borrowed, unless some other presumably worthy purpose for which the cash was expended had been neglected."

The railroad's witnesses were E. G. Buckland, chairman, and G. T. Carmichael, controller. Mr. Buckland reviewed the financial history of the road since 1913, calling attention to the fact that control of the trolley and steamship properties was taken away from the railroad by a decree of the federal court in 1914 and vested in trustees, and that this decree was subsequently modified and finally rescinded. During this period, the railroad was not able to exercise managerial control of these properties, and that the trustees in some cases in their management of the properties did not take into account changing transportation conditions. He mentioned one large trolley property in particular, control of which was handed back to the New Haven in 1927 and which up to that time had made little or no provision whatsoever for substituting buses for obsolete interurban lines. If the railroad had had control of this property during this period, it doubtless would have set its house in order.

Mr. Buckland also called attention to the tremendous increases in operating expenses which the road inherited as a result of federal control, calling attention to the fact that the pre-war operating ratio of approximately 70 per cent was not restored until 1927. Chairman Mahaffie

asked the witness if the purpose of this testimony was to show "that the Director General also ruined you," and the witness replied in the affirmative. He also pointed out that the road had to borrow 90 million dollars from the government as a result of the situation created by federal control and that the government made a profit of 14 million dollars on the transaction by getting its funds at 4¼ per cent and lending them to the railroad at 6 per cent.

Mr. Buckland said that he did not condone the "exorbitant prices" paid for some of the trolley properties but that "the sin was in the amount we paid for them" rather than in the acquisition of the properties themselves. He expressed the opinion that "we could have won through had it not been for the court action which deprived us of the management of our property."

Club Meeting

The Pacific Railway Club will have an annual holiday entertainment on Thursday evening, December 10, beginning at 7:30 p.m. in the Transportation Club, Palace Hotel, San Francisco. There is no business on the docket.

North Coast Limited Speeded Up

The eastbound running time of the North Coast Limited of the Northern Pacific will be cut 45 min., and the westbound schedule 30 min., effective December 6. The train will leave Chicago at 11 p.m. as at present, and will arrive in Seattle, Wash., at 8 a.m. the third morning instead of 8:30 a.m. Returning, it will leave Seattle at 9:15 p.m. instead of 8:30 p.m., and will arrive in Chicago at 8:45 a.m. the third morning as at present.

3,000 Expected to Attend New York Railroad Club Dinner

Approximately 3,000 members and guests of the New York Railroad Club are expected to attend that organization's annual dinner to be held at the Commodore Hotel, New York, on next Thursday evening, December 10. Preliminary reports of committee chairmen showed that by the middle of this week reservations for more than 2,800 had already been made. At last year's dinner about 2,600 persons were in attendance. Presiding will be C. A. Gill, president of the club, who has just been promoted to the general managership of the Reading and Central of New Jersey.

Senator Wheeler May Not Reintroduce Government Ownership Bill

Senator Wheeler, of Montana, chairman of the Senate committee on interstate commerce, has stated that he does not intend to reintroduce at the coming session of Congress his government ownership bill, drafted at his request by the former federal co-ordinator of transportation and his counsel. He has been quoted as saying that the railroads have been using the government ownership issue as a "bogey" to create opposition to other measures. The bill was introduced in the Senate on April 15, 1935, with an announcement by the Senator that it was intended more to provoke discussion than with a view to urging its passage at that time, and it has not yet been made the subject of committee hearings. Similar bills were also introduced in the House by Representatives Maverick, of Texas, and Lundeen, of Minnesota, and these may be reintroduced.

As Representative Lundeen has since been elected Senator the bill may be placed before the Senate by his introduction even if Senator Wheeler does not put it in.

Baltimore & Ohio Reduces Running Time of Royal Blue

The Baltimore & Ohio on December 6 will reduce by 15 minutes the running time on its northbound Royal Blue between Washington, D. C., and New York, and at the same time will inaugurate a plan for the reservation of seats in the coaches of this train. Under the expedited schedule the Royal Blue will make its Washington-New York run in 3 hr. 45 min. instead of 4 hr. as at present. It will leave Washington a half hour earlier 3:45 p.m. instead of 4:15. Southbound there will be no change in the train's running time but there will be slight schedule alterations in arrival times in Philadelphia, Pa., Wilmington, Del., and Baltimore, Md.

The arrangement for the reservation of coach seats which, the announcement says, "will mark the first time that an eastern road will sell its two-cent fare coach seats by number," will prevail on both the northbound and southbound trains. All coach seats will be thus reserved except those in the combine-coach nearest the engine.

Rule Providing for Substitution of Highway Service

The Interstate Commerce Commission has given the railroads sixth section permission to continue for another six months tariffs on the present basis containing provision for the substitution of highway service for rail service on less-than-carload freight, from December 31, 1936, to April 30, 1937. The tariff rule states that wherever as to l.c.l. freight an originating or delivering railroad substitutes at its option highway service for railroad service, the rates and charges will apply when the substituted service performed is either entirely by highway or partly by highway and partly by railroad. The highway service in all cases must be limited to the most practicable highway routing nearest to the line of railroad making the substitution. To take advantage of this permission, the railroads must file schedules with the commission not later than December 16 in order that 15 days' notice may be given prior to the expiration of the present tariffs. The commission specifically states that this permission is not to be construed as expressing any opinion as to the lawfulness of the tariff.

Rice Rates Found Generally Reasonable

On a complaint by the Arkansas Rice Traffic Bureau assailing rates on rough rice, clean rice, brewers' rice, and rice by-products from Texas, Louisiana, Memphis, Tenn., and Arkansas to destinations throughout the United States, the Interstate Commerce Commission has found that in general the rates are not unlawful. It did find that in the case of rates on clean rice, brewers' rice, and rice by-products from points in the Southwest to destinations to which class rates were prescribed in the Consolidated Southwestern Cases, and on rough rice from Arkansas to New Orleans, and to Memphis, the rates were unreasonable to the extent they exceed the column 27.5 rates on clean rice, the column 22.5 rates on brewers' rice and the column 17.5 rates on rough rice and rice by-products from and to the same points prescribed in that proceeding subject to carload minima indicated in the report. The commission also found that the failure of defendant railroads to permit milling in transit of rice by-products from Louisiana and Texas on the basis of through rates from the point of origin of rough rice to final destination of the by-products was unreasonable.

Canadian Wage Case Hearings

The Board of Conciliation headed by Justice A. K. MacLean, president of the Exchequer Court of Canada, which has been sitting in Montreal last week hearing arguments in respect to an application of Canadian railwaymen for termination of the existing ten per cent deduction from basic wage rates, adjourned until December 9, when statements in rebuttal will be presented.

During the first three days of the hearing, Howard B. Chase, spokesman for the 17 standard railway labor organizations involved, representing over 100,000 employees, submitted statements claiming restoration of the cut in wages on the grounds of general business recovery, the termination of similar wage deductions on United States lines 18 months ago, and the greater efficiency and productivity of railway employees.

George Hodge, manager of personnel, Canadian Pacific Railway, spokesman for both the C.P.R. and C.N.R. systems, submitted that not only was it impossible for the railways to assume increased operating costs without applying for advances in passenger and freight rates, but that on a "real wage" basis, railwaymen were better off today, when working, than they were during even the high wage peak of 1920. While the men were suffering but a 10 per cent deduction, the shareholders for some years past had been forced to submit to a 100 per cent cut in dividends, he pointed out.

1,698 Passenger Cars Air-Conditioned in Six Months

The railroads and the Pullman Company in the past six months have increased by 1,698 the number of air-conditioned passenger cars in operation, according to a statement by J. J. Pelley, president of the Association of American Railroads. This brings to 7,846 the total number owned and operated by the railroads and by the Pullman Company in service as of October 1, this year.

Of that number, the railroads had 3,777 air-conditioned passenger cars, compared with 2,731 on April 1, last, or an increase of 1,046, including 2,185 passenger coaches, 771 having been added within the past six months, 874 dining cars, and 718 other classes of passenger equipment.

The Pullman Company on October 1

had 4,069 air-conditioned passenger cars, of which 652 were equipped with air-conditioning devices in the past six months. These cars include not only sleeping cars but also other passenger equipment.

The Equipment Research Division of the association has for some months been conducting an investigation into the air-conditioning of passenger equipment with a view of ascertaining what further improvements can be made and what can be done toward further standardizing such equipment in an effort to reduce installation and maintenance costs. This research work has now been completed and the report is expected to be ready to submit to the board of directors of the association in the near future.

Heavy Thanksgiving Travel

Virtually all Eastern roads reported substantial increases in passenger traffic for the Thanksgiving holidays as compared with last year. In this connection increases in travel into and out of New York ranged up to levels more than 75 per cent above last year.

The New York, New Haven & Hartford's business into and out of New York was "nearly double" that of 1935's Thanksgiving period. Despite the fact that this is primarily a New England holiday that road found westbound travel into New York as heavy as the eastbound into New England. With business at New York 50 per cent better than last year, the Pennsylvania operated into and out of Pennsylvania Station there more than 175 extra trains comprised of 1,600 extra coaches and Pullmans. The New York Central, with an increase at New York of more than 30 per cent over last year, operated more than 30 extra trains as well as extra sections on regular trains. The Baltimore & Ohio, between October 24 and 29, handled at New York about 48 per cent more passengers than in the same period of 1935, while the Central of New Jersey reported increases in business up to 20 per cent. The Delaware, Lackawanna & Western and the Lehigh Valley have as yet no definite figures on their Thanksgiving business which they called, respectively, "a very favorable showing," and "the best in a number of years." Both of these roads operated extra sections to all important trains.

The Canadian Roads in October

An increase of $962,439 in gross operating revenues for October, as compared with last year, and an increase in gross operating revenues of $10,311,676 for the first ten months of the present year, are shown by the Canadian National.

Gross operating revenues in October were $18,786,278, as compared with $17,823,839 in the corresponding month of last year. Operating expenses were $15,147,759, against $14,195,774 for October of last year. There was a net operating revenue in October, 1936, of $3,638,519, as compared with $3,628,065 in October, 1935, an increase of $10,454.

For the ten months of the calendar year to October 31 gross operating revenues of the all-inclusive system were $153,234,590, an increase of $10,311676 over the revenues for the corresponding period of 1935. Operating expenses for the ten months of 1936 were $143,390,610, an increase of $10,230,321. Net revenue for the 1936 period was $9,843,980, an increase of $81,355.

In October the Canadian Pacific had net operating revenues totaling $4,403,183, as compared with $4,249,343 for October, 1935, an increase of $153,839. Gross revenues for the month at $14,249,421 showed an increase of $51,212, while operating expenses at $9,846,238 decreased by $102,627.

For the ten-month period net operating revenues of the road amounted to $16,230,651, as compared with $15,636,101 for the same period of last year, representing an increase of $594,549. Gross for the ten-month period at $114,193,000 showed an increase of $7,954,369, while operating expenses at $97,962,349 showed an increase of $7,359,819.

A. R. E. A. Nominates Officers

The nominating committee of the American Railway Engineering Association has prepared the following ticket for submission to the members:

President, J. C. Irwin, valuation engineer, B. & A., Boston, Mass.

Second Vice-President, E. M. Hastings, chief engineer, R. F. & P., Richmond, Va.

Secretary, E. H. Fritch (re-nominated).

Treasurer, A. F. Blaess, chief engineer, I. C., Chicago.

Directors (three to be elected), Frederick Mears, assistant chief engineer, G. N., Seattle, Wash.; F. L. Nicholson, chief engineer, N. S., Norfolk, Va.; C. P. Richardson, engineer water service, C. R. I. & P., Chicago; J. G. Brennan, engineer of grade crossings, Association of American Railroads, Washington, D. C.; W. M. Vandersluis, general superintendent telegraph & signals, I. C., Chicago; F. P. Turner, principal assistant engineer, N. & W., Roanoke, Va.; C. S. Kirkpatrick, chief engineer, M. P., Houston, Tex.; J. B. Hunley, engineer bridges and structures, C. C. C. & St. L., Cincinnati, Ohio; and R. C. White, assistant general manager, M. P., St. Louis, Mo.

Members of nominating committee (five to be elected), J. B. Trenholm, engineer maintenance of way, A. C. L., Savannah, Ga.; H. C. Mann, chief engineer, U. P., Omaha, Neb.; H. F. Sharpley, assistant chief engineer, C. of G., Savannah, Ga.; A. H. Morrill, chief engineer, B. & M., Boston, Mass.; W. A. Murray, engineer maintenance of way, N. Y. C., New York; R. E. Warden, engineer public improvements, M. P., Little Rock, Ark.; C. H. Tillett, signal engineer, C. N. R., Toronto, Ont.; G. R. Smiley, chief engineer, L. & N., Louisville, Ky.; R. C. Gowdy, chief engineer, C. & S., Denver, Colo.; and George A. Knapp, special engineer, S. P. (Texas & Louisiana lines), Houston, Tex.

Senate Committee to Begin Hearings in Railroad Finance Investigation

Chairman Wheeler of the Senate committee on interstate commerce has announced that public hearings in connection with its investigation of railroad financial affairs, authorized by a Senate resolution, will begin on December 7 and that first attention will be given to matters pertaining to the Missouri Pacific. The investigation has been under way for over a year but has so far been carried on largely by a force of investigators working under the direction of Max Lowenthal, counsel for the committee, assisted by about 60 employees of the Interstate Commerce Commission. It is expected that J. P. Morgan will be one of the witnesses called but no date has been announced for his appearance.

Subpoenas have been issued by the committee for records of the Mid-America Corporation, the company which purchased the block of securities through which control of the principal companies in the Van Sweringen system had been held at a public auction in September, 1935, of the collateral pledged for approximately $50,000,000 of loans from a group of bankers. Subpoenas were also issued for the appearance at the opening of the hearing of George A. Tomlinson, of Cleveland, and George A. Ball, of Muncie, Ind., associates of the Van Sweringen brothers who had subscribed for the stock of the Mid-America; John P. Murphy, secretary of the company, and Thomas H. Jones, of Cleveland.

The hearings are to be held before a sub-committee consisting of Senators Wheeler, Barkley, Wagner, Donahey, and White.

Doubted That Dominion Can Regulate Motor Transport

Conflict between the provincial and the Dominion authority will prove the most serious obstacle against extending the powers of the federal rate-fixing body now known as the Board of Railway Commissioners, as proposed by Hon. Clarence D. Howe, Minister of Transport at Ottawa. After the coming session of parliament this body, according to Mr. Howe's plan, is to be known as the federal transportation commission.

T. B. McQuesten, Minister of Highways in the Ontario Cabinet of the same political color as the administration at Ottawa, addressing the Automotive Transport Association of Ontario in Toronto warned truck owners against placing their business in the hands of a federal rate-fixing body, and Mr. Howe, addressing the Ottawa Board of Trade this week, admitted the transportation problem was tough, that one could never keep it in one place long enough to get a solution.

"Please bear in mind that the federal government has on its hands the railway problem, which is its greatest burden and its chief difficulty; it cannot do other than make a lesser service contribute to the solution of that problem," Mr. McQuesten said, cautioning against the move suggested by some of the Association's members.

"Any federal commission dealing with your industry will use it to bolster up railway transportation. Naturally your rates will be increased and determined on a competitive basis with the railways. With the increase in your rates, however, so will the cost of maintenance, labor and standard of equipment increase.

"We have seen all this happen in the federal regulation of railways to the point where they were and are facing extinction

unless their rates can be reduced," Mr. McQuesten said, claiming that only 10 per cent of the transport owners would benefit while the other 90 per cent would be thrown into the discard.

Regulation of steamship and aircraft traffic rates in the same manner the Board of Railway Commissioners regulates railway traffic might be arranged without too great difficulty, but similar regulations for highway traffic present an almost insurmountable problem, Transport Minister C. D. Howe declared in his address at Ottawa.

All forms of transportation in the Dominion were heavily subsidized by the government, the Minister said. Railways had been built by government assistance in one form and another, and it was not surprising that the government now found itself in the railway business.

Steamships were heavily subsidized directly and indirectly with subsidies, free lighthouse services, navigation aids and harbors. The same was true of air transport, which was aided by landing field facilities, free radio and weather services, while bus and truck services used highways built at the cost of the taxpayers.

Meetings & Conventions

The following list gives names of secretaries, date of next or regular meetings, and places of meetings:

AIR BRAKE ASSOCIATION.—T. L. Burton, Room 3400, Empire State Bldg., New York, N. Y.

ALLIED RAILWAY SUPPLY ASSOCIATION.—F. W. Venton, Crane Company, 836 S. Michigan Ave., Chicago, Ill. To meet with Air Brake Association, Car Department Officers' Association, International Railway Master Blacksmiths' Association, International Railway General Foremen's Association and the Master Boiler Makers' Association.

AMERICAN ASSOCIATION OF FREIGHT TRAFFIC OFFICERS.—W. R. Curtis, F. T. R., M. & O. R. R., Chicago, Ill.

AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—E. L. Duncan, 816 McCormick Bldg., Chicago, Ill.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York, N. Y.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—F. O. Whiteman, Union Station, St. Louis, Mo. Annual meeting, June 15-17, 1937, Chicago, Ill.

AMERICAN ASSOCIATION OF RAILWAY ADVERTISING AGENTS.—E. A. Abbott, Poole Bros., Inc., 85 W. Harrison St., Chicago, Ill. Annual meeting, January 15-16, 1937.

AMERICAN ASSOCIATION OF SUPERINTENDENTS OF DINING CARS.—F. R. Borger, C. I. & L. Ry., 836 S. Federal St., Chicago, Ill.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, 319 N. Waller Ave., Chicago, Ill. Annual meeting, 1937, Chicago, Ill. Exhibit by Bridge and Building Supply Men's Association.

AMERICAN RAILWAY CAR INSTITUTE.—W. C. Tabbert, 19 Rector St., New York, N. Y.

AMERICAN RAILWAY DEVELOPMENT ASSOCIATION.—E. J. Hoddy, Louisville & Nashville R. R., Louisville, Ky.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—Works in co-operation with the Association of American Railroads, Division IV.—E. H. Fritch, 59 E. Van Buren St., Chicago, Ill. Annual meeting, March 16-18, 1937. Palmer House, Chicago, Ill.

AMERICAN RAILWAY MAGAZINE EDITORS' ASSOCIATION.—M. W. Jones, Baltimore & Ohio R. R., Mt. Royal Station, Baltimore, Md.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—G. G. Macina, C., M., St. P. & P. R. R., 11402 Calumet Ave., Chicago, Ill.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—R. E. Schindler, Union Trust Bldg., Washington, D. C.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—C. E. Davies, 29 West 39th St., New York, N. Y.

Railroad Division.—Marion B. Richardson, 192 E. Cedar St., Livingston, N. J.

AMERICAN TRANSIT ASSOCIATION.—Guy C. Hecker, 292 Madison Ave., New York, N. Y.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—H. L. Dawson, 1427 Eye St., N. W., Washington, D. C. Annual meeting, January 26-28, 1937, Roosevelt Hotel, New Orleans, La.

ASSOCIATION OF AMERICAN RAILROADS.—H. J. Forster, Transportation Bldg., Washington, D. C.

Operations and Maintenance Department.—J. M. Symes, Vice-President, Transportation Bldg., Washington, D. C.

Division I.—Operating.—J. C. Caviston, 30 Vesey St., New York, N. Y.

Freight Station Section.—R. O. Wells, Freight Agent, Illinois Central Railroad, Chicago, Ill.

Medical and Surgical Section.—J. C. Caviston, 30 Vesey St., New York, N. Y.

Protective Section.—J. C. Caviston, 30 Vesey St., New York, N. Y.

Safety Section.—J. C. Caviston, 30 Vesey St., New York, N. Y.

Telegraph and Telephone Section.—W. A. Fairbanks, 30 Vesey St., New York, N. Y. Next meeting, Oct. 5-7, 1937, Chicago, Ill.

Division II.—Transportation.—L. R. Knott, 59 E. Van Buren St., Chicago, Ill.

Division IV.—Engineering.—E. H. Fritch, 59 E. Van Buren St., Chicago, Ill. Annual meeting, March 16-18, 1937, Palmer House, Chicago, Ill.

Construction and Maintenance Section.—E. H. Fritch, 59 E. Van Buren St., Chicago, Ill. Annual meeting, March 16-18, 1937, Palmer House, Chicago, Ill.

Electrical Section.—E. H. Fritch, 59 E. Van Buren St., Chicago, Ill.

Signal Section.—R. H. C. Balliet, 30 Vesey St., New York, N. Y. Annual meeting, March 15-16, 1937, Hotel Stevens, Chicago, Ill.

Division V.—Mechanical.—V. R. Hawthorne, 59 E. Van Buren St., Chicago, Ill. Annual meeting, June, 1937, Atlantic City, N. J. Exhibit by Railway Supply Manufacturers Association.

Division VI.—Purchases and Stores.—W. J. Farrell, 30 Vesey St., New York, N. Y. Annual meeting, June, 1937, Atlantic City, N. J. Exhibit by Railway Supply Manufacturers Association.

Division VII.—Freight Claims.—Lewis Pilcher, 59 E. Van Buren St., Chicago, Ill. Annual meeting, June 15-17, 1937, Royal York Hotel, Toronto, Ontario, Canada.

Division VIII.—Motor Transport.—George M. Campbell, Transportation Bldg., Washington, D. C.

Car-Service Division.—C. A. Buch, Transportation Bldg., Washington, D. C.

Traffic Department.—A. F. Cleveland, Vice-President, Transportation Bldg., Washington, D. C.

Finance, Accounting, Taxation and Valuation Department.—E. H. Bonnell, Vice-President, Transportation Bldg., Washington, D. C.

Accounting Division—F. P. Ford, Transportation Bldg., Washington, D. C.

Treasury Division.—E. R. Ford, Transportation Bldg., Washington, D. C.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—F. L. Johnson, Chief Clerk and Claim Agent, General Claims Dept., Alton R. R., 340 W. Harrison St., Chicago, Ill. Annual meeting, May, 1937, Cincinnati, Ohio.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreuccetti, C. & N. W. Ry., 1519 Daily News Bldg., 400 W. Madison St., Chicago, Ill. Exhibit by Railway Electrical Supply Manufacturers' Association.

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—W. S. Carlisle, National Lead Company, 900 W. 18th St., Chicago, Ill. Meets with American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—C. R. Crook, 2271 Wilson Ave., N. D. G., Montreal, Que. Regular meetings, second Monday of each month, except June, July and August, Windsor Hotel, Montreal, Que.

CAR DEPARTMENT OFFICERS' ASSOCIATION.—A. S. Sternberg, M. C. B. Belt Ry. of Chicago, 7926 S. Morgan St., Chicago, Ill.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—G. K. Oliver, 2514 W. 55th St., Chicago, Ill. Regular meetings, second Monday of each month, except June, July and August, La Salle Hotel, Chicago, Ill.

CAR FOREMEN'S ASSOCIATION OF ST. LOUIS, MO.—E. G. Bishop, Illinois Central System, East St. Louis, Ill. Regular meetings, third Tuesday of each month except June, July and August, Hotel Statler, St. Louis, Mo.

CENTRAL RAILWAY CLUB OF BUFFALO.—Mrs. M. D. Reed, 1817 Hotel Statler, McKinley Square, Buffalo, N. Y. Regular meetings, second Thursday of each month except June, July and August, Hotel Statler, Buffalo, N. Y.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—(See Railway Fuel and Traveling Engineers' Association.)

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabasha St., Winona, Minn.

INTERNATIONAL RAILWAY MASTER BLACKSMITHS' ASSOCIATION.—W. J. Mayer, Michigan Central R. R., Detroit, Mich.

MASTER BOILER MAKERS' ASSOCIATION.—A. F. Stiglmeier, 29 Parkwood St., Albany, N. Y. Annual meeting, September, 1937, Hotel Sherman, Chicago, Ill.

NATIONAL ASSOCIATION OF RAILROAD AND UTILITIES COMMISSIONERS.—Clyde S. Bailey, 810 18th St., N. W., Washington, D. C. Annual meeting, August 31-September 3, 1937, Salt Lake City, Utah.

NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. H. White (Pres. and Sec'y), Room 1826, 208 S. La Salle St., Chicago, Ill. Exhibit at A. R. E. A. Convention, March 15-18, 1937, The Coliseum, Chicago, Ill.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, second Tuesday of each month, except June, July, August and September, Hotel Touraine, Boston, Mass.

NEW YORK RAILROAD CLUB.—D. W. Pye, 30 Church St., New York, N. Y. Regular meetings, third Friday of each month, except June, July and August, 29 W. 39th St., New York, N. Y.

PACIFIC RAILWAY CLUB.—William S. Wollner, P. O. Box 3275, San Francisco, Cal. Regular meetings, second Thursday of each month, alternately at San Francisco and Oakland, excepting June at Los Angeles and October at Sacramento.

RAILWAY BUSINESS ASSOCIATION.—P. H. Middleton (Treas. and Asst. Sec'y), First National Bank Bldg., Chicago, Ill.

RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 1941 Oliver Bldg., Pittsburgh, Pa. Regular meetings, fourth Thursday of each month, except June, July and August, Fort Pitt Hotel, Pittsburgh, Pa.

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—J. McC. Price, Allen-Bradley Company, 600 W. Jackson Blvd., Chicago, Ill. Meets with Association of Railway Electrical Engineers.

RAILWAY FIRE PROTECTION ASSOCIATION.—P. A. Bissell, 40 Broad St., Boston, Mass.

RAILWAY FUEL AND TRAVELING ENGINEERS' ASSOCIATION.—T. Duff Smith, 1660 Old Colony Bldg., Chicago, Ill.

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1941 Oliver Bldg., Pittsburgh, Pa. To meet with Mechanical Division and Purchases and Store Division, Association of American Railroads, June, 1937, Atlantic City, N. J.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, Waterbury Battery Company, 30 Church St., New York, N. Y. Meets with Telegraph and Telephone Section of A. A. R., Division I.

RAILWAY TIE ASSOCIATION.—Roy M. Edmonds, 1438 Syndicate Trust Bldg., St. Louis, Mo.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—T. F. Donahoe, Gen. Supvr. Road, Baltimore & Ohio, Pittsburgh, Pa. Annual meeting, September 14-16, 1937, Chicago, Ill.

SIGNAL APPLIANCE ASSOCIATION.—G. A. Nelson, Waterbury Battery Company, 30 Church St., New York, N. Y. Meets with A. A. R., Signal Section.

SOCIETY OF OFFICERS, UNITED ASSOCIATIONS OF RAILROAD VETERANS.—M. W. Jones, Baltimore & Ohio, Mt. Royal Station, Baltimore, Md. Annual meeting, October 9-10, 1937, Richmond, Va.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. T. Miller, 4 Hunter St., S. E., Atlanta, Ga. Regular meetings, third Thursday in January, March, May, July, September and November, Ansley Hotel, Atlanta, Ga.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—D. W. Brantley, C. of Ga. Ry., Savannah, Ga. Annual meeting, January 21, 1937, Southern Railway General Office Bldg., Atlanta, Ga.

TOOL FOREMEN SUPPLIERS' ASSOCIATION.—E. E. Caswell, Union Twist Drill Co., 11 S. Clinton St., Chicago, Ill. Meets with American Railway Tool Foremen's Association.

TORONTO RAILWAY CLUB.—R. H. Burgess, P. O. Box 8, Terminal "A," Toronto, Ont. Regular meetings, fourth Monday of each month, except June, July and August, Royal York Hotel, Toronto, Ont.

TRACK SUPPLY ASSOCIATION.—D. J. Higgins, Gardner-Denver Company, 332 S. Michigan Ave., Chicago, Ill. Meets with Roadmasters' and Maintenance of Way Association.

TRAVELING ENGINEERS' ASSOCIATION.—(See Railway Fuel and Traveling Engineers' Association.)

WESTERN RAILWAY CLUB.—C. L. Emerson, C. M., St. P. & P., Chicago, Ill. Regular meetings, third Monday of each month, except June, July, August and September, Hotel Sherman, Chicago, Ill.

Equipment and Supplies

Big Locomotive Orders Reported in November

Total of 174 includes 100 for N. Y. C.; car and rail markets are also active

Domestic orders for 174 locomotives, 1,550 freight cars, 50 passenger-train cars, six streamlined trains and 277,472 tons of rail were reported in November issues of *Railway Age*. These made the 1936 business to date in the locomotive market more than four times that of 1935's 12 months, while at the same time pushing the freight and passenger-car 11-months totals respectively up to substantially more than twice and three times as large as those reported for the whole of last year.

Involved in last month's purchases of 174 locomotives were the largest orders for steam locomotives which have been reported in several years. The New York Central's order for 100 was the largest reported since the Chesapeake & Ohio purchased 105 in 1930—a distinction which was also held for a few days prior to the N. Y. C. announcement by the Chicago, Milwaukee, St. Paul & Pacific's order for 31. Furthermore November's total of 174, while excluding power units for the six streamlined trains mentioned above, is but six short of the 180 locomotives ordered throughout this year's previous 10 months; and it brought the 1936 11-months total to 354—more than four times the 83 ordered during the 12 months of 1935. Also, there have been placed, since the November totals were compiled, additional orders, reported elsewhere in these columns, for 66 locomotives.

The November orders for 1,550 freight cars brings the 1936 11-months total to 40,214. This latter, already substantially in excess of the business for any full year since 1930, was pushed above the latter's total of 46,360 cars by subsequent orders, reported elsewhere in these columns, for more than 9,000 freight cars. In 1935 a total of 18,699 freight cars was ordered. Also there was last month's export order for 10 freight cars, bringing this year's export total to 526 cars as compared with 110 freight cars ordered for export throughout 1935.

The 50 passenger-train cars ordered in November bring the 1936 total to date to 204, or more than three times the 63 passenger-train cars ordered throughout 1935. This year's 11-months total exceeds that of any full year since 1930, except 1934, when 388 passenger-train cars were ordered. On December 1 there were outstanding inquiries for 36 passenger-train cars as well as that for 250 cars for service in New York City subways.

All of the foregoing passenger-train-car figures exclude articulated units for streamlined trains. Twelve of these articulated or partially-articulated trains have been ordered thus far in 1936, including the two mentioned elsewhere in these columns and the six mentioned above which were ordered last month by the Chicago, Rock Island & Pacific, as noted in the *Railway Age* of November 28. This Rock Island fleet, aside from the 1200 h.p. Diesel locomotives, will consist of four trains having three body units each and two trains of four body units each. The former will have accommodations for 120 passengers in the coach sections, 26 in the observation-lounge and 16 in a dinette; the four-body-unit trains will each have the same accommodations, and additional seats for 60 passengers in the extra coach unit.

With its rail orders for 277,472 tons November brought the 1936 total to 940,294 tons, which is in excess of the tonnage placed in any full year since 1929 when orders for 1,776,260 tons of rail were reported. Also, there have been subsequent orders, as noted elsewhere in these columns, for more than 400,000 tons of rail.

Domestic Equipment Orders Reported in Issues of the Railway Age in November, 1936

LOCOMOTIVES

Date	Name of company	No.	Type	Builder
Nov. 7	Union Pacific	20	4-8-4	American Locomotive Co.
Nov. 7	Utah Copper Co.	12	Electric	General Electric Co.
Nov. 21	Chicago, Burlington & Quincy	10	Freight and pass.	Company shops
		1	Streamlined steam	Company shops
Nov. 28	New York Central	50	Hudson	American Locomotive Co.
		50	Switcher	Lima Locomotive Works
Nov. 28	Chicago, Milwaukee, St. Paul & Pacific	30	4-8-4	Baldwin Locomotive Wks.
		1	Hiawatha	American Locomotive Co.

FREIGHT CARS

Nov. 7	Union Pacific	300	Automobile	Company shops
Nov. 28	Gulf, Mobile & Northern	300	Box	American Car & Foundry
Nov. 28	Western Maryland	500	Box	Bethlehem Steel Co.
		100	Gondola	Bethlehem Steel Co.
Nov. 28	Chicago, Rock Island & Pacific	350	Automobile	American Car & Foundry

PASSENGER-TRAIN CARS

Nov. 28	Union Pacific	40	Coaches	Pullman-Standard
		5	Dining	Pullman-Standard
		5	Kitchen-dormitory	Pullman-Standard

Great Northern to Spend $33,000,000

The Great Northern has adopted a program of rehabilitation calling for the expenditure of $33,000,000, the completion of the program depending upon a continued rise in the company's revenues. Of the total, $22,000,000 will be spent for regular maintenance work; $6,500,000 for 500 new ore cars, 500 gondola cars and 1,000 box cars (reported in the *Railway Age* of November 28); $2,750,000 for rebuilding 11,000 freight cars in company shops, and the purchase of 12 coaches; and $1,750,000 for rails and fastenings.

Frisco Improvements

The St. Louis-San Francisco has applied to the United States district court at St. Louis, Mo., for permission to spend $2,184,875 for the widening of cuts and fills, the replacement of old rails, the construction of bridges, the repair of station buildings and the repairing of locomotives. It also seeks permission to scrap 25 locomotives and 695 passenger and freight cars.

LOCOMOTIVES

Norfolk & Western to Spend $8,000,000

The Norfolk & Western will build in its Roanoke, Va., shops eight additional high-speed, freight locomotives of the 1200 class (2-6-6-4 simple articulated), 500 gondola cars and 500 hopper coal cars. This road will also buy 1,000 hopper coal cars and 40,000 tons of 131-lb. rail and fastenings, at a total cost of about $8,000,000.

THE SOUTHERN PACIFIC is considering the purchase of 20 locomotives.

THE SEABOARD AIR LINE has ordered 5 locomotives of the 2-6-6-4 type from the Baldwin Locomotive Works.

THE ALUMINUM COMPANY OF AMERICA has ordered one Diesel-electric locomotive of 600 h.p. from the American Locomotive Company.

THE ST. LOUIS SOUTHWESTERN has been authorized by the federal court to spend $1,825,715 for the building of 5 locomotives, the purchase of 10 air-conditioned passenger coaches and for general additions and betterments.

THE DENVER & RIO GRANDE WESTERN, reported in the *Railway Age* of October 31 as inquiring for 15 locomotives, including 5 of the 4-8-4 type and 10 of the 4-6-6-4 type, has ordered this equipment from the Baldwin Locomotive Works.

THE WHEELING & LAKE ERIE has ordered 10 locomotives of the 2-8-4 type from the American Locomotive Company. These locomotives will have 25-in. by 34-in. cylinders and a total weight in working order of 431,000 lb. Inquiry for this equipment was reported in the *Railway Age* of October 10.

THE ATCHISON, TOPEKA & SANTA FE has ordered 27 locomotives, including eleven 4-8-4 type with 80-in. driving wheels, six 4-6-6-4 type with 84-in. driving wheels and ten 2-10-4 type, or Santa Fe 5,000 class, from the Baldwin Locomotive Works. The 17 passenger locomotives will have boilers of nickel steel construction, will be equipped with roller bearings and will burn oil. With these locomotives only one change of engine will be necessary between Chicago and the Pacific Coast, the change being made at La Junta, 991 miles from Chicago and 1,236 miles

from Los Angeles. The 10 freight locomotives are designed after experimental locomotives which the Santa Fe has used during the past six years in handling heavier trains over mountain territory at higher speeds.

FREIGHT CARS

THE SOUTHERN PACIFIC is making informal inquiry for freight cars.

THE SEABOARD AIR LINE has ordered 1,000 box cars from the Pullman-Standard Car Manufacturing Company.

THE MONTOUR RAILROAD has ordered 500 hopper cars from the Pullman-Standard Car Manufacturing Co.

THE CHESAPEAKE & OHIO is inquiring for 10 horse express cars, 25 seventy-ton dry bulk cars, 50 forty-ton stock cars and 50 thirty-foot caboose cars.

THE WESTERN MARYLAND has ordered 100 steel automobile box cars, 40 ft. 6 in. long, of 50 tons' capacity, from the Bethlehem Steel Company. This is in addition to its order for 600 cars reported in the *Railway Age* of November 28.

THE WESTERN PACIFIC has ordered 100 all steel Hart selective ballast cars of 50 tons' capacity from the American Car & Foundry Company. Inquiry for this equipment was reported in the *Railway Age* of October 24.

THE ATCHISON, TOPEKA & SANTA FE has ordered 3,025 freight cars, placing 1,500 fifty-ton box cars with the Pullman-Standard Car Manufacturing Company, 500 fifty-ton box cars with the American Car & Foundry Company, and 200 fifty-ton refrigerator cars, 500 forty-ton refrigerator cars and 325 seventy-ton gondola cars with the General American Transportation Corporation.

THE PACIFIC FRUIT EXPRESS has ordered 2,000 new refrigerator cars and will construct 1,750 cars at a total cost of approximately $10,500,000. Orders for 500 cars each have been placed with the General American Transportation Company, the American Car & Foundry Company, the Pullman-Standard Car Manufacturing Company, and the Pacific Car and Foundry Company. The work of rebuilding 1,750 refrigerator cars will be done in the company's shops at Roseville, Calif. and Los Angeles, at a cost of $2,715,000. The order for 2,000 new cars follows that placed last April for 2,700 cars.

PASSENGER CARS

THE SOUTHERN PACIFIC, THE CHICAGO & NORTH WESTERN AND THE UNION PACIFIC have placed an order with the Pullman-Standard Car Manufacturing Company for two light-weight, streamlined trains, the largest built thus far, for service between Chicago and San Francisco and Los Angeles, where they will replace the present City of Los Angeles and City of San Francisco, which will be transferred to other service. The Diesel electric power plants, totaling 5,400 horsepower, will be built by the Electro-Motive Corporation. Each train will consist of 17 cars, including three power cars, with a total length of 1,250 ft. The three power cars will be 208 ft. 8 in. in length, and each will have two 900 horsepower Diesel electric engines. The multiple control of the power plant, centering in the cab of the forward car, is designed so that the engines of any one car may be operated independently or in conjunction with either or both of the other cars. The plant will have a combined horsepower of 5,400, the greatest Diesel electric power ever used on any passenger train in the world. A fourth car will house the auxiliary Diesel engines used for air-conditioning and electric light facilities.

The cars will be roomier than any heretofore built. They will have more commodious lounge accommodations; the berths on all cars will be wider and longer than those on conventional equipment; and the dining facilities will involve a new type of construction and service. In the Pullman equipment there will be a duplex bedroom car on each train, while other Pullman accommodations will include sections, compartments, drawing rooms and individual and double bedrooms. Each train will have two dining cars, one of these diners on each train being of the coffee shop type for service of popular priced meals. Each train will have a full lounge observation car, and a club or cocktail car while a cocktail bar will be available in each lounge car. The trains will be completely air-conditioned, with individual heat control in every room of every car. Electric outlets for toilet articles—razors, curling irons, etc., will be available in all dressing rooms.

The exterior color design will be of the same motif as the present streamliners—canary yellow sides and brown tops and bottoms—but the side walls of the cars will be vertical instead of sloping, thus adding to the interior roominess. Chromium plate will be used on window frames, steps and hand rails and in exterior ornamentation.

The popularity of the present streamliners and the inability to take care of desired reservations even weeks in advance, is the primary reason for building the new trains. The total capacity of the City of San Francisco will be 228, with 174 Pullman passengers and 54 coach passengers. The City of Los Angeles will have Pullman accommodations for 150 passengers and 104 coach passengers, a total of 254.

Shippers Fostering Government Ownership?

The more difficulties the railroads get into financially the more feasible it becomes for the government to take them over, and there is a strong group in Congress well aware of that simple fact. Have the scores of business organizations fighting for lower rates calculated the chances that what they save on freight bills today they might lose tomorrow under government operation—to say nothing of the prospect that with the railroads in government hands the Walsh-Healey law would almost automatically make the federal government, as a purchaser of all rail supplies, dictator of wages and hours throughout the heavy industries?

From an Editorial in Barron's Weekly

IRON AND STEEL

THE ATLANTIC COAST LINE has purchased 10,000 tons of 100-lb. rail.

THE NASHVILLE, CHATTANOOGA & ST. LOUIS has ordered 6,075 tons of rails from the Tennessee Coal, Iron & Railroad Company.

THE CHICAGO & EASTERN ILLINOIS has ordered 7,000 tons of rails from the Carnegie-Illinois Steel Corp. and the Inland Steel Company.

THE CHICAGO, ROCK ISLAND & PACIFIC has ordered 35,000 tons of 112-lb. rails from the Carnegie-Illinois Steel Corp., the Inland Steel Company and the Colorado Fuel & Iron Corp.

THE CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC has ordered 30,000 tons of 112 and 131-lb. rails from the Carnegie-Illinois Steel Corp. and the Inland Steel Company.

THE ERIE has ordered 21,333 tons of rails, placing 16,633 tons with the Carnegie-Illinois Steel Corp., 3,000 tons with the Bethlehem Steel Company and 1,700 tons with the Inland Steel Company.

THE KANSAS CITY SOUTHERN has ordered 6,000 tons of rails from the Carnegie-Illinois Steel Corp., and 2,000 tons from the Inland Steel Company. Inquiry for this tonnage was reported in the *Railway Age* of October 31.

THE DENVER & RIO GRANDE WESTERN has ordered 12,640 tons of 131-lb. rails for main line tracks in Colorado and Utah from the Colorado Fuel & Iron Corp. Inquiry for these rails was reported in the *Railway Age* of July 11.

THE NEW YORK CENTRAL'S order for 82,150 tons of rail reported in the *Railway Age* of November 28 was placed with the following builders: Carnegie-Illinois Steel Corp., 38,500 tons; Bethlehem Steel Company, 32,750 tons; Inland Steel Company, 5,900 tons; Algoma Steel Company, 5,000 tons.

THE WABASH has been granted permission by the federal district court at St. Louis, Mo., to purchase 15,000 tons of 112-lb. rails and fastenings to replace 90-lb. rails on main lines. In granting permission, the court directed the receivers to purchase no more than the road could pay for from first quarter earnings in 1937.

THE DELAWARE, LACKAWANNA & WESTERN has placed orders for 17,175 tons of track steel, as follows: For 10,000 tons of 131-lb. rail, 1,000 tons of joint bars and 1,000 tons of tie plates to the Bethlehem Steel Corporation; 1,000 tons of 131-lb. rail and 2,000 tons of tieplates to the

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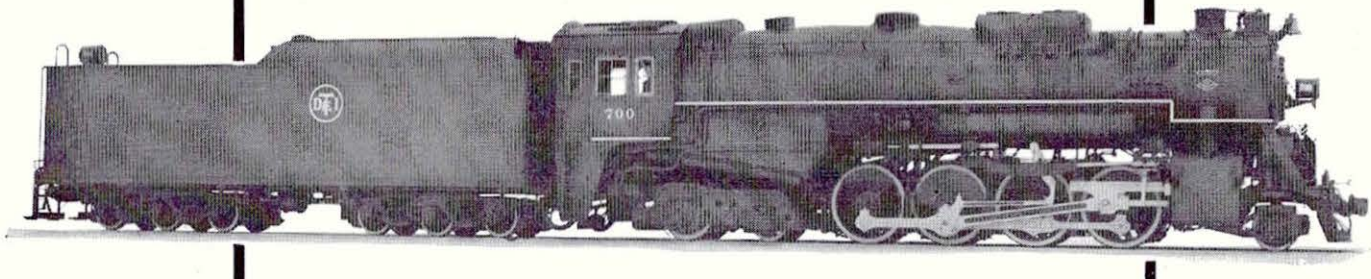
IT PAYS

HANDSOMELY



Forward-looking railroad men regard the modern locomotive from the broad viewpoint of ability to produce more and lower cost transportation.

Without increasing the weight on drivers, modern power is capable of delivering at least 25 to 30% greater horse power capacity compared with locomotives ten years old or over.

After all proper charges including amortization have been made, modern power will yield a handsome profit because it moves trains faster and at less cost.

LIMA LOCOMOTIVE WORKS INCORPORATED

LIMA LOCOMOTIVE WORKS, INCORPORATED, LIMA, OHIO

United States Steel Corporation; 2,000 tons of tieplates and 175 tons of track bolts to the Republic Steel Corporation; other accessories for track construction and replacement have been divided among various companies.

THE BALTIMORE & OHIO has placed orders for 52,000 tons of new steel rail. This order is divided among the following plants: Bethlehem Steel Company, 17,500 tons of 131-lb. rail; Carnegie-Illinois Steel Corp., 32,500 tons, of which 22,700 tons will be 131-lb. rail and 9,800 tons 112-lb. rail; Inland Steel Company, 2,000 tons of 112-lb. rail; this rail is ordered for the Baltimore & Ohio Chicago Terminal Railroad Company, subsidiary of the B. & O.

THE MISSOURI PACIFIC has ordered 33,950 tons of rails, including 11,100 tons of 90-lb. and 22,850 tons of 112-lb. section. Of the total tonnage, 21,400 tons, or 120.8 miles of the 112-lb., and 6,600 tons, or 46.5 miles of the 90-lb. rails are for use on the Missouri Pacific, while the remainder is to be used on the Gulf Coast Lines and the International-Great Northern. The rails will be rolled by the Colorado Fuel & Iron Corp, the Carnegie-Illinois Steel Corp., the Tennessee Coal, Iron & Railroad Company, the Inland Steel Company and the Bethlehem Steel Company.

THE VAN SWERINGEN LINES have ordered 60,207 tons of rails as follows:

Chesapeake & Ohio

19,860 tons—Carnegie-Illinois Steel Corp.
13,115 tons—Inland Steel Company
4,496 tons—Bethlehem Steel Company

37,471

Pere Marquette

3,330 tons—Carnegie-Illinois Steel Corp.
3,182 tons—Inland Steel Company
888 tons—Bethlehem Steel Company
1,800 tons—Algoma Steel Company

9,200

New York, Chicago & St. Louis

8,799 tons—Carnegie-Illinois Steel Corp.
3,113 tons—Inland Steel Company
1,624 tons—Bethlehem Steel Company

13,536

THE ATCHISON, TOPEKA & SANTA FE has ordered 116,916 tons of rails, and 38,100 tons of track fastenings, dividing these tonnages among four rail mills and other accessory manufacturers. Of the rails, 74,230 tons were placed with the Colorado Fuel & Iron Corp., 9,561 tons with the Inland Steel Company, 28,680 tons with the Carnegie-Illinois Steel Corp. and 4,445 tons with the Bethlehem Steel Company. Of the rails 111,865 tons will be 112-lb., 3,911 tons 90 lb., and 1,140 tons 131-lb. When this rail is laid the Santa Fe will have 5,230 miles of 112-lb. rails, with only 261 miles of 90-lb. rails remaining in its high-speed territory.

THE MODELMAKER CORPORATION, Wauwatosa, Wis., has recently published a booklet entitled "Choice of Scale and Gauge" by Linn Westcott. This booklet of 30 pages is priced at 25 cents, and is described as "a handbook on planning the basic ideas of your model railroad." It gives results of a comprehensive survey made among model railroaders as to the reasons for building a line and the best ways in which these reasons can be carried out as to space, scale and gauge.

Supply Trade

Fred Lavis, consulting engineer, has moved his office from 120 Wall street to 30 Broad street, New York City.

Sika, Inc., has moved its office from the Grand Central Terminal building to 330 W. 42nd street, New York City.

James A. Drain, Jr., eastern representative of **Sperry Products, Inc.,** Brooklyn, N. Y., who has been associated with the development and operation of the transverse fissure detector equipment of that company since its inception in 1927, has resigned, effective December 12, to become president of the **Stefco Steel Company,** Michigan City, Ind., manufacturers of pre-fabricated standard steel buildings.

Eastern Railway Supplies, Inc., 110 East 42nd street, New York, has been incorporated by **Ralph W. Payne,** Washington, D. C., and **Stanley H. Smith,** Cleveland, Ohio, to carry on a general railway supply business. **Waldo E. Bugbee,** formerly associated with the National Lock Washer Company, has been appointed representative of the company. Messrs. Payne and Smith will continue to carry on their present businesses in Washington and Cleveland, respectively. The **Nordberg Manufacturing Company,** Milwaukee, Wis., has appointed the Eastern Railway Supplies, Inc., its representative.

George H. Weiler has become associated with the **Vanadium Corporation of America** as manager, Eastern Railroad division, with headquarters in New York City. For a number of years Mr.

George H. Weiler

Weiler was sales manager of the American Locomotive Company, New York; later secretary-manager of the Forging Manufacturers' Association, New York City; and more recently was connected with the Standard Steel Works Company, Burnham, Pa.

OBITUARY

Charles W. Osborne, chairman of the board of directors of the Gold Car Heating & Lighting Company, Brooklyn, N. Y., died on December 1, at his home in Englewood, N. J. Mr. Osborne celebrated his 97th birthday last August and up to this time has been active as a member of the board. He had been with the company since March, 1888, over 48 years ago.

TRADE PUBLICATION

DIESEL-ELECTRIC TRAINS.—Publication GEA-1928, issued by the General Electric Company, Schenectady, N. Y., contains pictures and performance features of seventeen high-speed Diesel-electric trains now operating in the United States. The pamphlet outlines the history of high-speed Diesel-electric rail transportation from the advent of the original Burlington Zephyr in 1934, and includes descriptions of the Flying Yankee, the Abraham Lincoln, the Green Diamond, the Super Chief, the City of Los Angeles, City of San Francisco, City of Denver and the later Burlington Zephyrs.

Construction

BALTIMORE & OHIO.—In connection with alterations and additions on account of the installation of heating system at Pier 22, North River, New York City, contracts have been given to the following: Dierks Heating Company, New York City, for heating equipment; Kuhn, Smith & Harris, Inc., New York City, for alterations and additions; and Hatzel & Buehler, Inc., New York City, for electrical work. The work will cost about $87,000.

DELAWARE, LACKAWANNA & WESTERN.—This road has received bids for work in connection with the elimination of the grade crossing at Transit Road, Depew, N. Y. See *Railway Age,* September 26, page 465.

LEHIGH VALLEY.—Bids will be received December 17 for grade crossing elimination work at Town Line (Young's) crossing, Cortland county, N. Y., to cost about $35,000.

READING.—A contract, involving a total expenditure of about $25,900 for alterations and additions to various facilities at Reading Terminal, Philadelphia, Pa., has been awarded to E. H. Keefer & Son, Philadelphia. The work is to be done on the terminal's mail house, post office, express office, and a new driveway entrance into the baggage room.

SOUTHERN PACIFIC.—A contract has been awarded to the Morrison-Knudsen Company, Inc., Los Angeles, Cal., for the grading for a line and grade change, 0.35 mile in length, in Sacramento River canyon near Lamoine station, Cal. The work involved in this contract will cost approximately $22,000. This company has awarded a contract to the Soule Steel Company, San Francisco, Cal., for the installation of two disappearing trucking tables between freight sheds A and F and B and E at Fifth and Berry streets, San Francisco, Cal. The approximate cost of this contract is also $22,000.

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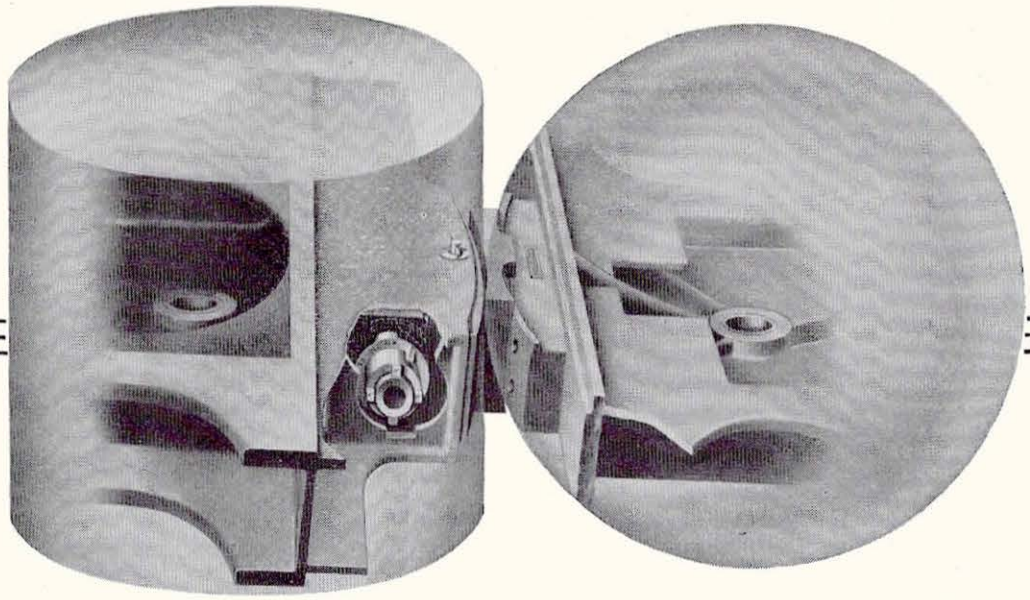


FULL FACED CONTACT

With Unlimited Movement

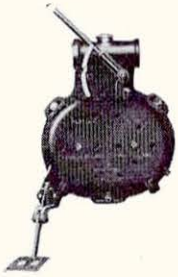
Observe how the Radial Buffer Type E-2 is always in full faced contact, yet permits unlimited freedom of movement between engine and tender.

Its spring-controlled frictional resistance to compression avoids all lost-motion and subsequent destructive shocks to drawbar and pins.

It effectively dampens oscillation between engine and tender.

The E-2 Radial Buffer improves the riding of the locomotive, protects against excessive stress and shock on drawbar and pins and increases safety of locomotive operation.

Its twin, the Franklin Automatic Compensator and Snubber, takes the job of maintaining proper driving box adjustment and further improves smoothness of operation, extends locomotive mileage and reduces maintenance costs, because it protects the foundation of the locomotive.



The Franklin #8 Butterfly Type Firedoor increases the efficiency of locomotive firing.

No locomotive device is better than the replacement part used for maintenance. Genuine Franklin repair parts assure accuracy of fit and reliability of performance.

FRANKLIN RAILWAY SUPPLY COMPANY, INC.

NEW YORK CHICAGO MONTREAL

Financial

ATCHISON UNION DEPOT. — *Operating Agreement.*—The Atchison, Topeka & Santa Fe, the Chicago, Burlington & Quincy, the Chicago, Rock Island & Pacific, and the Missouri Pacific have applied to the Interstate Commerce Commission for approval of a new contract for the operation and maintenance of this company's terminal at Atchison, Kan.

BIRMINGHAM SOUTHERN. — *Equipment Trust Certificates.*—The Interstate Commerce Commission, Division 4, has authorized this company to assume obligation and liability for $900,000 of 3½ per cent serial equipment trust certificates, to be issued by the New York Trust Company, as trustee, and sold at 106.137 and accrued dividends in connection with the procurement of certain equipment.

BOSTON & MAINE.—*Abandonment.*—The Interstate Commerce Commission has authorized the abandonment of part of this company's branch line from Goffstown, N. H., to Heuniker Junction, approximately 17 miles.

CHICAGO, ROCK ISLAND & PACIFIC.—*Equipment Trust Certificates.*—The trustees have applied to the Interstate Commerce Commission for authority to issue equipment trust certificates in the amount of $2,550,000, the interest rate not to exceed 4 per cent. The proceeds will be used to purchase 350 automobile cars, 6 Diesel passenger locomotives, and 20 passenger cars.

NEW YORK CENTRAL.—*R.F.C. Loan Paid in Full.*—The Reconstruction Finance Corporation on November 30 announced that this company had anticipated all of its remaining notes to the corporation, including $6,969,000 collateral notes which the R.F.C. had purchased from the Federal Emergency Administration of Public Works, by making a payment of $16,858,950. The company had borrowed $27,499,000 from the R.F.C., of which $18,020,000 had previously been repaid. The remaining note to the R.F.C. was due July 1, 1941, and the P.W.A. notes matured serially from June 1, 1937, to June 1, 1944. The company was able to make the payment without borrowing elsewhere, it was stated, and still have ample working balances, with no bank debts or other maturities over the next few years that cannot be easily met.

NORFOLK & WESTERN.—*New Directors.*—C. D. Young, vice-president of the Pennsylvania, and E. R. Johnson, a business man of Roanoke, Va., have been elected to the directorate of this company.

PIEDMONT & NORTHERN.—*Bonds.*—Subject to approval of the Interstate Commerce Commission a banking group headed by Blyth & Co. have offered at 100 an issue of $6,250,000 of first mortgage 3¾ per cent bonds of this company, the proceeds to be used in redemption at 105 on January 1 of outstanding 5 per cent bonds. The Commission has approved the sale of the bonds at 97½; and also of $475,000 of serial debentures at 98½.

ST. LOUIS-SAN FRANCISCO.—*Trustees' Suits.*—The Appellate Division of the New York courts has reversed the action of the Supreme Court (New York County) in dismissing the suits of the trustees of this company against Speyer & Co., J. & W. Seligman & Co. and E. N. Brown in connection with acquisition by the Frisco of stock of the Rock Island and the Gulf, Mobile & Northern. The cases, which seek to recover from the defendants sums lost by the railroad in these stock transactions, have by this decision been restored to the calendar for trial.

ST. LOUIS-SAN FRANCISCO.—*Reorganization.*—At a hearing before Director O. E. Sweet of the Bureau of Finance of the Interstate Commerce Commission, on December 1, it was decided to postpone indefinitely further hearings on the reorganization of the St. Louis-San Francisco. E. N. Brown, chairman of the board, testified that present earnings of the road do not justify the reorganization of the property at this time. He urged that the present reorganization plan which was filed with the commission in 1932 be held in abeyance until earnings of the road justify reorganization. The director took under consideration several suggestions which included recommendations that the present managers' plan be declared prima facie impracticable and the proceeding dismissed, that the plan be held in abeyance until there was a further recovery of the road's earnings, and that the commission speed up reorganization by modifying the present plan to more nearly meet the present day conditions of the road. Mr. Brown stated that the earnings of the Frisco had improved materially, but that no one can tell how long this present condition will last.

WACO, BEAUMONT, TRINITY & SABINE.—*Abandonment.*—The Interstate Commerce Commission has authorized this road to abandon the Colmesneil branch, extending from Trinity to Colmesneil, Texas, 66.6 miles.

WHEELING & LAKE ERIE—*Equipment Trust Certificates.*—The Interstate Commerce Commission, Division 4, has granted authority to the Wheeling & Lake Erie to assume obligation and liability in respect of $750,000 of equipment trust certificates, Series E, to be issued by the Union Trust Company of Pittsburgh, as trustee, and sold at 103.411 and accrued dividends in connection with the procurement of new equipment.

Average Prices of Stocks and of Bonds

	Dec. 1	Last week	Last year
Average price of 20 representative railway stocks..	55.23	55.84	41.73
Average price of 20 representative railway bonds..	83.46	82.83	74.83

Dividends Declared

Atchison, Topeka & Santa Fe.—Preferred, $2.50, semi-annually, payable February 1 to holders of record December 31.

Beech Creek.—50c, quarterly, payable January 2 to holders of record December 15.

Boston & Albany.—$2.25, payable December 21 to holders of record November 30.

Reading.—2nd Preferred, 50c, quarterly, payable January 14 to holders of record December 24.

Railway Officers

EXECUTIVE

J. E. Crawford, general manager of the Norfolk & Western, has been appointed vice-president in charge of operation, with headquarters as before at Roanoke, Va, succeeding **W. J. Jenks,** whose election to the N. & W. presidency was announced in the *Railway Age* of October 31. **George Dunglinson, Jr.,** manager of the railroad's fuel department

J. E. Crawford

at Bluefield, W. Va., has been appointed assistant vice-president in charge of traffic, with headquarters at Roanoke, Va. Mr. Crawford was born in San Diego, Cal., on December 1, 1876, and was educated at the University of Pennsylvania. He entered the service of the Pencoyd Iron Works in 1895 as a draftsman and was later promoted to designer in the same organization. In July, 1903, Mr. Crawford entered the service of the Norfolk & Western as acting bridge engineer and in

George Dunglinson, Jr.

1904 he was appointed bridge engineer. He was appointed acting chief engineer in May, 1913, and on March 1, 1914, he became chief engineer. On February 16, 1923, he was promoted to assistant general manager, and served in that capacity until his appointment as general manager on May 1, 1924, the position he held until

Continued on next left-hand page

MODERNIZE

YOUR BRICK ARCHES

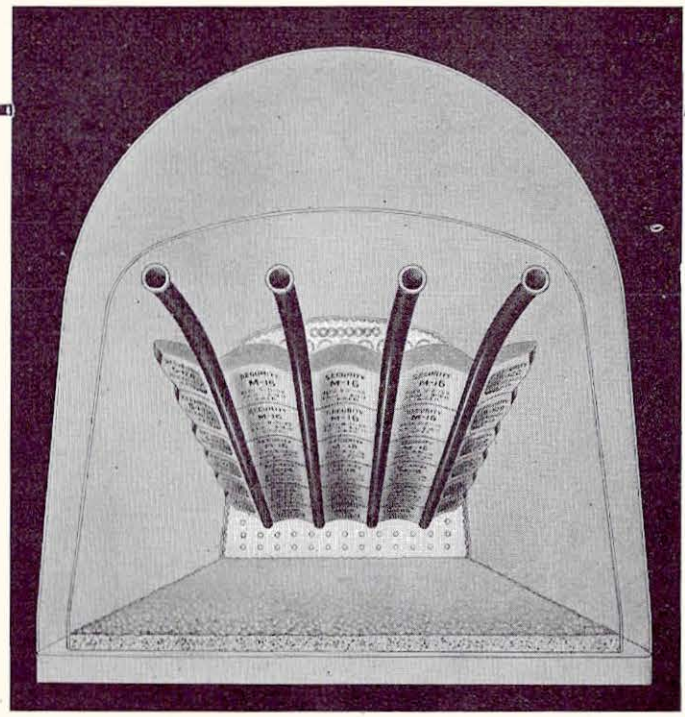
When You Modernize Your Power

The Brick Arch that was correctly designed for a locomotive fire box when the engine was originally placed in service may or may not be correct for the engine when it is modernized and its service changed.

The chances are that a different design is required. If a stoker has been applied, the original arch just can't be efficient.

American Arch Company engineers will gladly consult with you on such problems. Their experience over many years in designing and servicing fire box Brick Arches is available for the asking.

On any power you modernize be sure the Brick Arch is modernized too. Then be sure you get full effectiveness and economy from it by maintaining a complete arch at all times.



There's More to SECURITY ARCHES Than Just Brick

HARBISON-WALKER REFRACTORIES CO.

Refractory Specialists

AMERICAN ARCH CO.
INCORPORATED

Locomotive Combustion Specialists » » »

his recent appointment as vice-president in charge of operation.

Mr. Dunglinson was born in Cockermouth, Cumberland, England, and entered the service of the Norfolk & Western in April, 1908, as car allotment commissioner. He was promoted to chairman of the car allotment commission in June, 1912, and in 1917 was made assistant to the general manager at Roanoke. Mr. Dunglinson was appointed manager of the fuel department, with headquarters at Bluefield, in June, 1920, the position he held until his recent appointment as assistant vice-president in charge of traffic at Roanoke.

D. W. Dinan, vice-president and general manager in charge of operation, Lines Buffalo and East, of the New York Central, retired on December 1, after 53 years of continuous service with that company. **D. B. Fleming,** assistant general manager, with headquarters at Syracuse, N. Y., has been appointed vice-president and general manager, Lines Buffalo and East, with headquarters at New York. Mr. Dinan was born on November 14, 1866, at Whiteport, N. Y., and was graduated from New Paltz Academy in June, 1883. He en-

D. W. Dinan

tered railway service in December of the same year as a station agent and telegrapher for the Walkill Valley (now a part of the New York Central), at Binnewater, N. Y. He served from March, 1886, to November, 1900, as train dispatcher on the West Shore (now also a part of the New York Central) at Kingston, N. Y., and then served successively as trainmaster and chief trainmaster of the Pennsylvania division of the New York Central at Jersey Shore, Pa. On October 1, 1904, he was appointed assistant superintendent of the same division and in May of the following year was promoted to superintendent at Corning, N. Y. He became superintendent of the Mohawk division at Albany, N. Y., on April 1, 1911, and general superintendent of the Second district at Buffalo, N. Y., on May 1, 1917. In 1924 Mr. Dinan was promoted to assistant general manager at Syracuse, serving in that capacity until January, 1927, when he was appointed general manager of the road, with headquarters at New York. Mr. Dinan was appointed vice-president and general manager, Lines Buffalo and East, in September, 1933.

Mr. Fleming was born on February 12, 1877, at Snowshoe, Pa., and received a high school education. He entered railway

D. B. Fleming

service in July, 1893, as a telegraph operator on the Pennsylvania division of the New York Central & Hudson River (now a part of the New York Central), and in October, 1899, he became a train dispatcher. In February, 1903, he became chief dispatcher and in November of the following year he was appointed assistant trainmaster. He became trainmaster of the Mohawk division in October, 1906, and in November, 1910, was appointed assistant superintendent of the Hudson division. Mr. Fleming was transferred to the Mohawk division as assistant superintendent in July, 1911, and in September, 1913, was appointed superintendent of the Buffalo division. He was transferred in the same capacity to the Mohawk division in April, 1918, and in May, 1924, was promoted to general superintendent at Albany, which position he held until January, 1927, when he was appointed assistant general manager.

F. M. Falck, general manager of the Reading, with headquarters at Philadelphia, Pa., has been promoted to assistant vice-president in charge of personnel of the Reading and the Central of New Jer-

F. M. Falck

sey, with the same headquarters. Mr. Falck was born on July 5, 1874, at Atlanta, Ga., and was graduated from Cornell University in 1896. He entered railway service in 1898, as assistant supervisor of the Philadelphia & Reading (now Reading) at Shamokin, Pa., and from May, 1899, to December, 1901, he was supervisor at Shamokin. From the latter date to May, 1902, he was supervisor of the New York division at Philadelphia, Pa., being transferred in the same capacity to Trenton, N. J., in May, 1902. He served as division engineer of the Shamokin division at Tamaqua, Pa., from May, 1903, to June, 1905, when he became division engineer of the Reading division at Reading. From March to October, 1910, he served as assistant superintendent of the Wilmington & Columbia division at Reading and from the latter date until January, 1913, he was superintendent of the same division, with the same headquarters. Mr. Falck served as superintendent of the Atlantic City Railroad from January, 1913, to October, 1916, and as acting superintendent of the Reading division of the Philadelphia & Reading from November, 1916, until January, 1917. During 1917 he served successively as superintendent of the Atlantic City Railroad, superintendent of the latter and also of the Delaware River Ferry Company, and as assistant general manager of the Philadelphia & Reading system at Reading. Mr. Falck was appointed general manager of the Reading in December, 1917, which position he held until his recent appointment as assistant vice-president in charge of personnel of the Reading and Central of New Jersey. From July, 1918, to March, 1920, Mr. Falck served also as general manager of the Central of New Jersey.

FINANCIAL, LEGAL AND ACCOUNTING

Douglas Call, whose election as treasurer for the Richmond, Fredericksburg & Potomac, with headquarters at Richmond, Va., was noted in the *Railway Age* of November 28, was born on October 29, 1883, at Richmond. He entered railway service in July, 1901, as trace clerk in the traffic department of the Richmond, Fredericksburg & Potomac and on November 13, 1901, he entered the treasury department as clerk. Mr. Call was appointed paymaster in 1905 and continued in that office until September, 1907, when he entered the agricultural implement business. He returned to railroad service in January, 1913, as paymaster and was appointed assistant treasurer in February, 1921, which position he held until his recent election as treasurer.

OPERATING

J. W. Myers has been appointed trainmaster on the Central district of the Union Pacific, with headquarters at Pocatello, Idaho.

C. H. Tabor, trainmaster of the Scioto division of the Norfolk & Western, with headquarters at Portsmouth, Ohio, has been appointed superintendent of the Pocahontas division, at Bluefield, W. Va., succeeding **W. O. Tracy. William Workman,** assistant trainmaster of the Scioto

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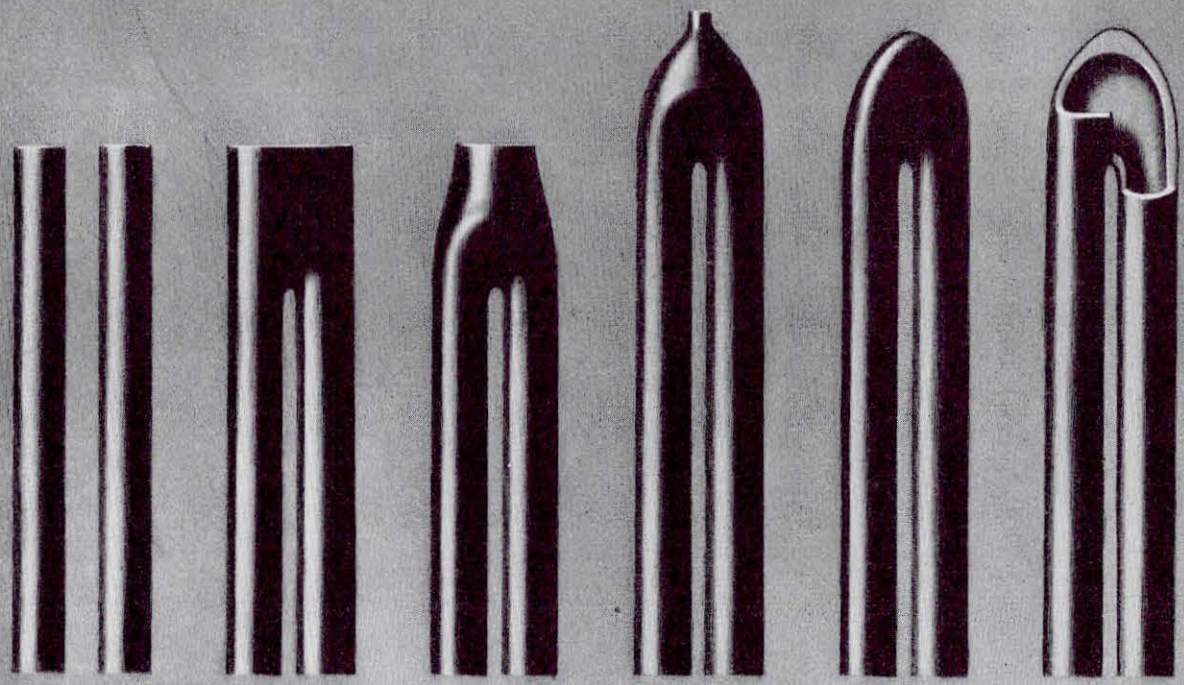
Do Not Scrap Old Superheater Units



The exclusive Elesco forging process, used in the Elesco remanufacturing service, unifies sound lengths of unserviceable superheater units into strong, homogeneous units, with interiors and exteriors like new.

The cost is about half that of new units and the service life is comparable to the life of new units.

Standardize on the Elesco remanufacturing service for worn-out superheater units and get the benefit of economical and trouble-free superheater service.

THE SUPERHEATER COMPANY

Representative of AMERICAN THROTTLE COMPANY, INC.

60 East 42nd Street
NEW YORK

ELESCO

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Canada: The SUPERHEATER COMPANY, LTD., MONTREAL

Superheaters – Feed Water Heaters – Exhaust Steam Injectors – Superheater Pyrometers – American Throttles – Tangential Steam Dryers

division, with headquarters at Kenova, W. Va., has been appointed trainmaster of that division, succeeding Mr. Tabor. **C. E. Hammer,** yardmaster on the Pocahontas division at Weller, has been promoted to assistant trainmaster of the Scioto division, succeeding Mr. Workman.

Angus R. McLeod, assistant superintendent of the Montreal Terminals division of the Canadian Pacific at Montreal, Que., has been transferred in the same capacity to Brownville Junction, Me., succeeding **G. A. Bowler,** transferred.

Berkeley Ward, Jr., trainmaster of the Delmarva division of the Pennsylvania, has been transferred to the Chicago Terminal division to succeed **C. P. Fisher,** whose promotion to superintendent of the Chicago Terminal division, on November 1, was announced in the *Railway Age* of November 7.

W. R. Devenish, general superintendent of the Manitoba district of the Canadian National at Winnipeg, Man., effective November 17, was promoted to general superintendent of transportation of the Western region with the same headquarters, to succeed **N. B. Walton,** whose appointment as chief of transportation at Montreal, Que., was reported in the *Railway Age* of November 21. **W. T. Moodie,** general superintendent at North Bay, Ont., has been transferred to the British Columbia district at Vancouver, B. C., to replace **B. T. Chappell,** who has been transferred to the Manitoba district at Winnipeg, to succeed Mr. Devenish. **W. I. Munro,** general superintendent of the Alberta district at Edmonton, Alta., has been transferred to the Saskatchewan district at Saskatoon, Sask., to succeed **W. C. Owens,** who goes to Edmonton to replace Mr. Munro. All these appointments except that of Mr. Devenish became effective on December 1.

R. H. Smith, general superintendent of the Western General division of the Norfolk & Western, with headquarters at Bluefield, W. Va., has been appointed

R. H. Smith

general manager at Roanoke, Va., succeeding **J. E. Crawford,** whose promotion to a vice-presidency is noted elsewhere in these columns. **George E. Bruch,** assistant to the general manager, with headquarters at Roanoke, has been promoted to assistant general manager, with the same headquarters. **W. O. Tracy,** superintendent of the Pocahontas division, with headquarters at Bluefield, has been appointed general superintendent of the Western General division at Bluefield, succeeding Mr. Smith. Mr. Smith was born in Baltimore, Md., on March 10, 1888, and was educated at Princeton University, from which he was graduated in 1911 with a degree in civil engineering. He entered the service of the Norfolk & Western on July 1, 1910, as an axeman in the engineering department at Roanoke, during a summer vacation while attending college. He re-entered the service of the N. & W. in June of the following year as masonry inspector in the same department and on February 1, 1912, was appointed transitman. On June 1, 1913, he was promoted to assistant roadmaster of the Radford division at Pulaski, Va., and Roanoke. On October 15, 1914, Mr. Smith was advanced to roadmaster of the same division and in June, 1917, he was

George E. Bruch

appointed assistant superintendent of the Pocahontas division. In October, 1919, he was transferred to the Radford division in the same capacity, being promoted to the position of superintendent of the Radford division on December 26, 1922. Mr. Smith became general superintendent of the Eastern General division in 1931, and subsequently became general superintendent of the Western General division.

Mr. Bruch was born at Portsmouth, Ohio, on April 23, 1889, and entered the service of the Norfolk & Western in 1904 as a file clerk at Portsmouth. Including various positions in the operating and maintenance of way departments, Mr. Bruch served as clerk to the trainmaster on the Pocahontas and Scioto divisions, and clerk to the superintendent of construction. On December 16, 1909, he was appointed chief clerk to trainmaster and on December 24, 1911, he became chief clerk to the general foreman of construction on the Scioto division. On March 5, 1916, Mr. Bruch was promoted to the position of general timekeeper and on October 19, 1920, he became assistant to the general manager, with headquarters at Roanoke, the position he held until his recent appointment as assistant general manager.

Mr. Tracy was born in Winchester, Ky., on May 25, 1885, and was educated at Kentucky University. He began his rail-

W. O. Tracy

road career with the Norfolk & Western on November 17, 1905, as a rodman in the engineering department on the Pocahontas division. In November, 1907, he was appointed inspector on the Norfolk division, and became transitman in 1911. In 1913 he was appointed assistant resident engineer on the Pocahontas division. He later served as resident engineer on the Radford division, and in September, 1919, was promoted to assistant superintendent of the Pocahontas division. He was made superintendent of the Pocahontas division on May 1, 1931, the position he held until his recent appointment as general superintendent of the Western General division.

Charles A. Gill, superintendent of motive power and rolling equipment of the Reading and the Central of New Jersey, with headquarters at Reading, Pa., has been appointed general manager of these companies, with the same headquarters. Mr. Gill entered the service of the Baltimore & Ohio in 1896 as a call boy in the motive power department, later becoming a

Charles A. Gill

machinist in the Mount Clare (Baltimore) shops of the same company. In the years following he acquired a varied experience as mechanic, general foreman, master mechanic and general master mechanic. On

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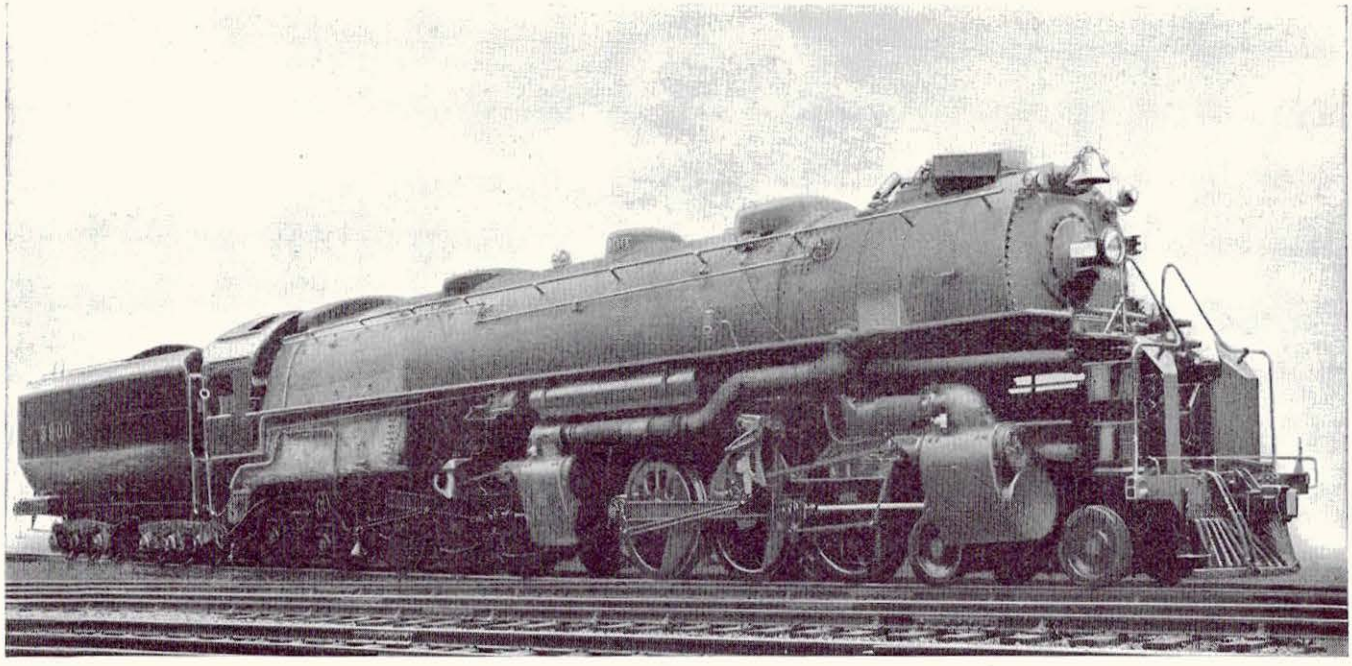
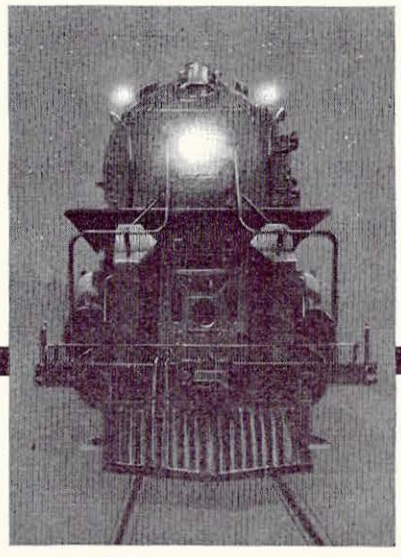


The "CHALLENGER" Type

A Motive Power Unit
approaching
100,000 lb. Tractive Power
for
High-Speed Through Freight Service
with
Lowest Possible Maintenance
both for
Locomotive and Right-of-way.

Weight on Drivers,	386,000 pounds
Weight of Engine,	566,000 pounds
Cylinders,	22 x 32 inches
Diameter of Drivers,	69 inches
Boiler Pressure,	255 pounds
Maximum Tractive Power,	97,400 pounds

NEW POWER — NEW PROFITS



Alco

AMERICAN LOCOMOTIVE COMPANY

30 CHURCH STREET, NEW YORK CITY

February 1, 1917, he was appointed superintendent of motive power of the Eastern lines of the Baltimore & Ohio, remaining in that position until February 10, 1931, when he accepted from the Soviet government a one-year appointment as chief consulting engineer of the railway systems of the Union of Soviet Socialist Republics. In that capacity he aided in the development of motive power and other equipment problems of the Soviet system, and also advised in the expenditure of the 1931 Russian railroad budget, amounting to $1,700,000,000 and covering some 60,000 miles of line. Mr. Gill's first position upon his return from Russia early in 1932 was assistant to chief motive power and equipment of the Baltimore & Ohio. He became special representative of the Reading, later in 1932 and in September of the same year was appointed superintendent motive power and rolling equipment of the Reading Company. His jurisdiction was extended to include the Central of New Jersey on September 1, 1933.

TRAFFIC

C. H. Guion, assistant freight traffic manager of the Missouri Pacific, who has

C. H. Guion

been promoted to traffic manager as reported in the *Railway Age* of November 14, has been in the service of this company for 16 years. His first position was as assistant general freight agent at Houston, Tex., which he held until January 1, 1927, when he was promoted to freight traffic manager of the Gulf Coast Lines (a unit of the Missouri Pacific lines). On November 15, 1932, he was made assistant freight traffic manager of the Missouri Pacific Lines, with headquarters at St. Louis, Mo., the position he was holding at the time of his recent appointment as freight traffic manager. Mr. Guion's office remains at St. Louis.

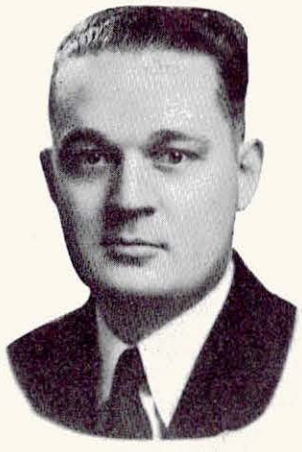
L. D. Jolly, traveling freight and passenger agent for the Chicago, Rock Island & Pacific at Atlanta, Ga., has been appointed general agent, with the same headquarters, to succeed **J. G. Elgin,** resigned. **L. C. Lamb,** traveling freight agent at Tulsa, Okla., has been promoted to general agent, with headquarters at Winston-Salem, N. C., to succeed **J. O. Younger,** who has been appointed commercial agent at Little Rock, Ark., to succeed **A. Scougale,** deceased.

C. D. Bordelon, assistant general freight agent on the Missouri Pacific at St. Louis, Mo., who has been advanced to assistant freight traffic manager, rates, as

C. D. Bordelon

reported in the November 14 issue, has been identified with this company for eight years. He first entered the service of the Missouri Pacific Lines in April, 1928, as commercial agent for the Gulf Coast Lines at Houston, Tex. In October of the same year he was advanced to assistant general freight agent, with the same headquarters. In July, 1932, Mr. Bordelon was transferred to St. Louis, where he remained until his recent promotion to assistant freight traffic manager, rates. His headquarters remain at St. Louis.

J. R. Staley, general freight agent on the Missouri Pacific, with headquarters at St. Louis, Mo., who has been promoted to assistant freight traffic manager in charge of solicitation, with the same headquarters, as reported in the November 14 issue of *Railway Age,* first entered the service of this company in 1927 as a clerk in the freight traffic department at St. Louis. In August, 1930, he was advanced to assistant general freight agent and in July,



J. R. Staley

1934, he was further promoted to general freight agent at St. Louis. He was holding the latter position at the time of his recent appointment as assistant freight traffic manager in charge of solicitation.

P. H. Coon, assistant general freight agent of the Missouri Pacific, with headquarters at St. Louis, Mo., who has been promoted to general freight agent, with headquarters at Houston, Tex., as reported in the *Railway Age* of November 14, has served in various capacities with a number of roads for 18 years. Mr. Coon was born on August 10, 1892, at Edgerton, Wis., and after a public school education he attended the University of Wisconsin. During the World War he was in military service and on December 28, 1918, he entered the service of the Atchison, Topeka & Santa Fe, holding various positions with this company in the mechanical, operating and accounting departments until February 1, 1921, when he was transferred to the traffic department, with headquarters at Galveston, Tex. On June 8, 1923, Mr. Coon was appointed chief rate clerk with the Southern Pacific at Houston, Tex., holding this position until March 31, 1928, when he left this company to go with the Missouri Pacific as assistant chief clerk at Houston. Subsequently he was appointed chief clerk and

P. H. Coon

on July 15, 1928, he was further advanced to assistant general freight agent. On July 1, 1932, Mr. Coon was transferred from Houston to the general offices of the Missouri Pacific at St. Louis, Mo., where he was located at the time of his appointment as general freight agent, which became effective on November 1.

Arthur C. Bridge has been appointed general agent, freight department, New York Central System, with headquarters at Dallas, Tex., succeeding **M. A. Greding** deceased.

J. H. Kuntz, chief clerk in the general freight office of the Baltimore & Ohio and the Alton at Chicago, has been promoted to assistant general freight agent, with the same headquarters, to succeed **J. C. Miller,** deceased.

ENGINEERING AND SIGNALING

C. E. Crippen, assistant engineer in the water service department of the Chicago,

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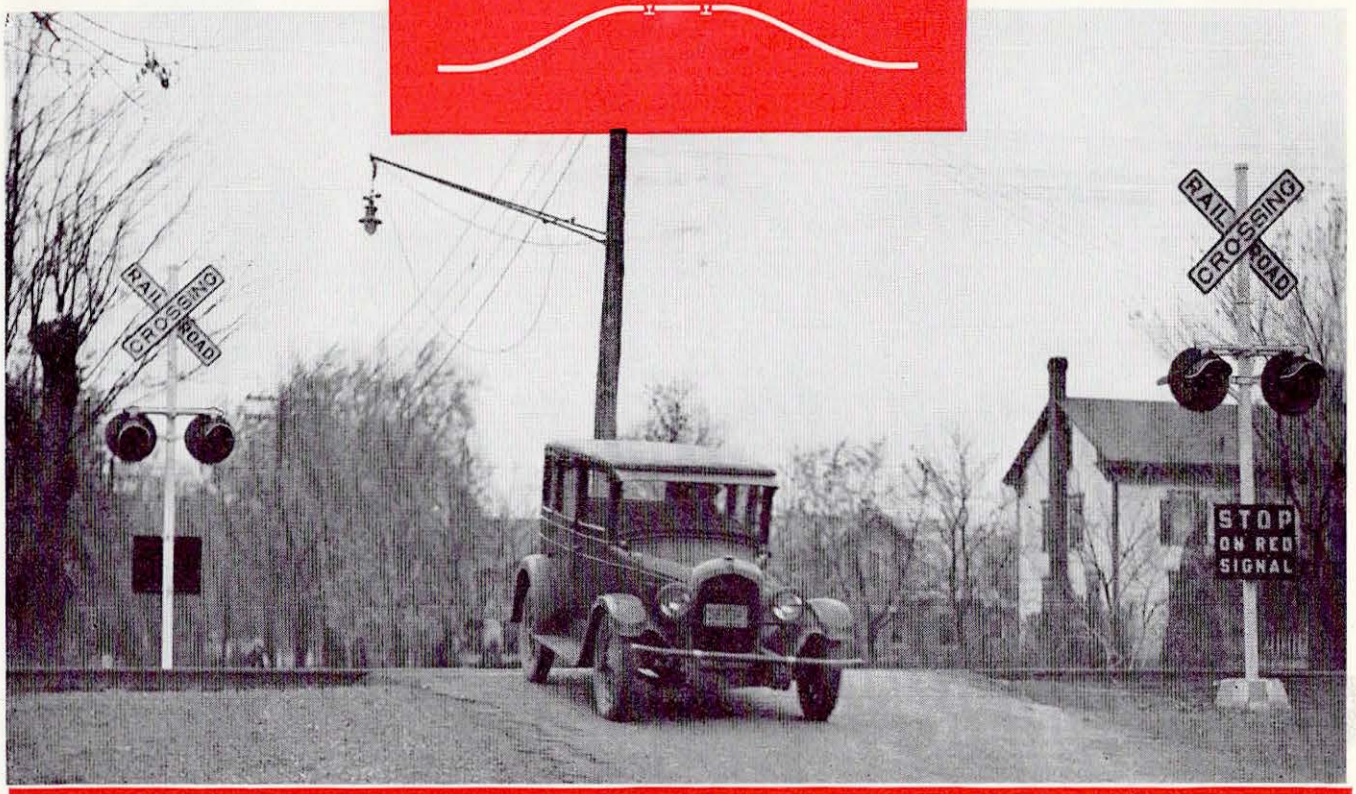
Up and Over



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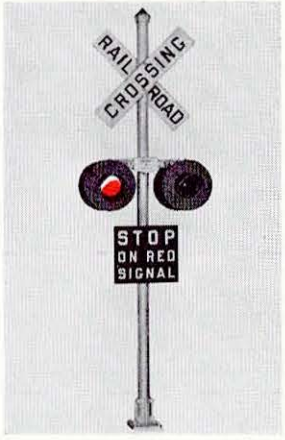
Flashing light highway crossing assembly, with indications visible in either direction of travel on the highway, with 90° double-face, cast-iron crossbuck and auxiliary reflector type signs, is the present recommended combination for the type of crossing illustrated. An audible crossing bell may be added, if required. Such a combination meets A.A.R. and most federal, state and local requirements. » » » » »



THERE are many such locations throughout the country. The arresting beams of the "Union" Flashing Light Highway Crossing Signal are clearly visible and give the motorist an unmistakable warning. Their installation at such locations is an effective and economical substitute for expensive grade changes or even separation. » »

Whatever the requirements, "Union" highway crossing protective devices meet any specifications. Consult our nearest district office for details.

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1881 1936 **Union Switch & Signal Co.**

NEW YORK MONTREAL CHICAGO ST. LOUIS SAN FRANCISCO

SWISSVALE · · · · · · · · · PENNSYLVANIA

Milwaukee, St. Paul & Pacific, at Chicago, has been promoted to division engineer of the Dubuque-Illinois division, with headquarters at Savanna, Ill., to replace **E. H. Johnson,** who has been transferred to the Trans-Missouri division with headquarters at Miles City, Mont., relieving **H. B. Christianson,** who has been transferred to the LaCrosse and River division, with headquarters at LaCrosse, Wis., where he replaces **W. F. McDonald,** who has been transferred to the Milwaukee division with headquarters at Milwaukee, Wis., relieving **Walter Lakoski,** who has been appointed division engineer of the Terre Haute division, with headquarters at Terre Haute, Ind. **T. H. Strate,** who has been division engineer of the Chicago Terminal and Terre Haute divisions, retains jurisdiction over the Terminal division. All of these changes are effective December 1.

MECHANICAL

G. R. Galloway, superintendent of motive power of the Western lines of the Baltimore & Ohio, with headquarters at Cincinnati, Ohio, has been appointed superintendent of motive power of the Eastern lines, with headquarters at Baltimore, Md., succeeding **A. K. Galloway.**

A. K. Galloway, superintendent of motive power of the Eastern lines of the Baltimore & Ohio, with headquarters at Baltimore, Md., has been appointed superintendent of motive power and rolling equipment of the Reading and the Central of New Jersey, with headquarters at Reading, Pa., succeeding **C. A. Gill.**

E. J. McSweeney, district master mechanic of the Western lines of the Baltimore & Ohio, has been appointed superintendent of motive power of the Western lines, with headquarters as before at Cincinnati, succeeding **G. R. Galloway. H. Rees,** master mechanic, Western lines, at Akron, Ohio, has been appointed district master mechanic at Cincinnati, succeeding Mr. McSweeney. **W. F. Harris,** general foreman locomotive department, Western lines, at Willard, Ohio, has been appointed master mechanic at Akron, succeeding Mr. Rees.

Thomas W. Demarest, general superintendent of motive power of the Western region of the Pennsylvania, with headquarters at Chicago, Ill., has been assigned to duty on the staff of the chief of motive power at Philadelphia, Pa. **W. Y. Cherry,** general superintendent of motive power of the New York zone, with headquarters at New York, has been appointed general superintendent of motive power of the Western region, with headquarters at Chicago, succeeding Mr. Demarest. **E. L. Bachman,** master mechanic of the Philadelphia division, with headquarters at Harrisburg, Pa., has been appointed general superintendent of motive power, New York zone, succeeding Mr. Cherry. **H. H. Haupt,** superintendent of motive power of the Eastern and Central Pennsylvania divisions, has been appointed general superintendent of motive power of the Central region, with headquarters at Pittsburgh, succeeding **M. R. Reed,** who has become superintendent of motive power of the Eastern Pennsylvania division. **J. S. Bell,** assistant enginehouse foreman at Philadelphia, has been promoted to assistant master mechanic of the Columbus, Cincinnati and Toledo divisions, with headquarters at Columbus, Ohio. These changes became effective on December 1.

Mr. Demarest was born on March 18, 1868, at Englewood, N. J., and was graduated from the Stevens Institute of Technology, Hoboken, N. J. He entered the service of the Pittsburgh, Cincinnati & St. Louis (now P.R.R.) on August 1, 1889, as special apprentice at Columbus, Ohio. From August, 1891, to February, 1896, he was assistant to superintendent motive power of the same road at Columbus, and from the latter date until February, 1897, assistant to master mechanic at Indianapolis, Ind. Mr. Demarest served as general foreman locomotive department at Indianapolis from February, 1897, to August, 1899; master mechanic at Logansport, Ind., from August, 1899, to January, 1900; superintendent motive power from January, 1900, to July, 1903, all with the Pittsburgh, Cincinnati & St. Louis and its successor, the Pittsburgh, Cincinnati, Chicago & St. Louis (now Pennsylvania). He

T. W. Demarest

was superintendent motive power Northwest system, Pennsylvania Lines West of Pittsburgh, at Ft. Wayne, Ind., from July, 1903, until March, 1920, and from the latter date until June, 1925, he served as general superintendent motive power, Northwestern region, Pennsylvania system, at Chicago, Ill. Mr. Demarest became general superintendent motive power of the Western region at Chicago in June, 1925.

Mr. Bachman was born in 1881 at Coshocton, Ohio, and entered railroad service in 1902 in the Dennison, Ohio, shops of the Pennsylvania. After filling many positions in various shops and enginehouses he was advanced to master mechanic at Mingo Junction, Ohio, in 1926, and subsequently served in the same capacity at Wellsville, Ohio, and Olean, N. Y. Mr. Bachman has been master mechanic of the Philadelphia division since June, 1929.

Mr. Haupt was born in Germany in 1892 and was educated at the Royal Wilhelms Gymnasium at Cassel, and Johns Hopkins University and the University of Pennsylvania. He entered railway service in 1911, as apprentice in the Altoona machine shops of the Pennsylvania, during the summer months, while continuing his college studies. In 1916 he was appointed motive power inspector for the Pennsylva-

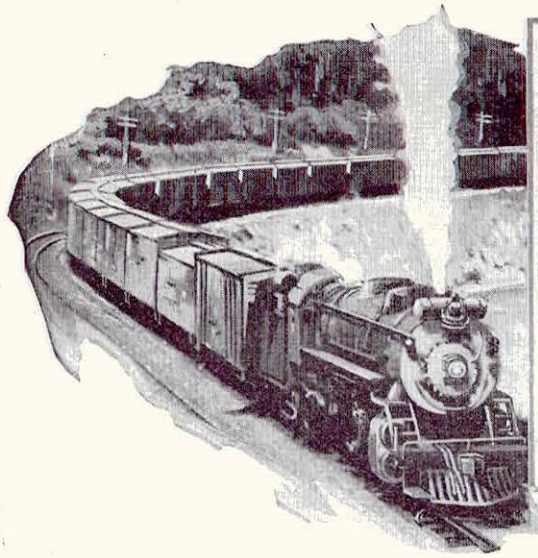
H. H. Haupt

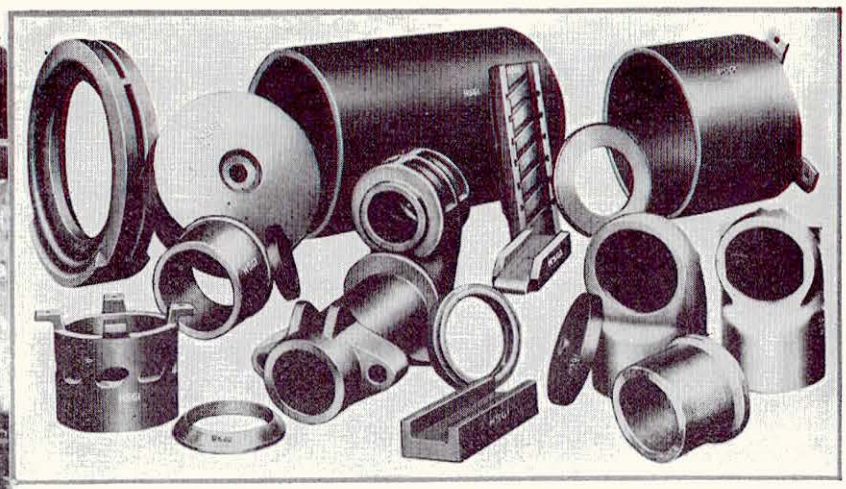
nia, and in November, 1917, was promoted to assistant master mechanic at Harrisburg. On October 1, 1918, Mr. Haupt was further promoted to assistant engineer of motive power, with headquarters at Williamsport, Pa., where he remained until 1924, when he was appointed master mechanic at Wilmington, Del. In May, 1928, the Northwestern division was created and Mr. Haupt was appointed superintendent of motive power of that division at Chicago. In October, 1929, he was appointed superintendent of motive power of the Northern division at Buffalo, N. Y., and in May, 1932, he was made master mechanic of the Central division, at Buffalo. Mr. Haupt was appointed superintendent of motive power of the Eastern and Central Pennsylvania divisions in November, 1933.

OBITUARY

Charles Patterson McCausland, engineer of surveys for the Western Maryland at Baltimore, Md., whose death on November 5 was noted in the *Railway Age* of November 7, was born on August 27, 1881, at Lonaconing, Md. After attending high school he began his career in the central Pennsylvania bituminous coal fields in 1901, later becoming a member of the firm of the Lorain Engineering Company, mining engineers, of Philipsburg, Pa. Then, after several years in the engineering departments of short-line railroads, he returned to the Lorain Engineering Co. When the Western Maryland began its new line from Cumberland to Connellsville in 1910, Mr. McCausland was engaged to design the bridge masonry. Afterwards he was promoted to locating engineer, making a number of surveys in Pennsylvania and West Virginia. In 1913 he was placed in charge of construction work, continuing until 1916. Since that time he had been in charge of location of coal lands and development of industries, particularly coal mining, along the line of the Western Maryland. At the time of his death he was in charge of designing structures for Federal grade crossing projects on the Western Maryland.

Table of Freight Operating Statistics appears on next left-hand page





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Freight Operating Statistics of Large Steam Railways—Selected Items for the Month of September,

Region, road, and year	Miles of road operated	Train-miles	Locomotive-miles: Principal and helper	Locomotive-miles: Light	Car-miles: Loaded (*thousands*)	Car-miles: Per cent loaded	Ton-miles (*thousands*): Gross, excluding locomotives and tenders	Ton-miles (*thousands*): Net, revenue and non-revenue	Number of road locomotives on line: Serviceable: Not stored	Serviceable: Stored	Unserviceable	Per cent unserviceable
New England Region:												
Boston & Albany....1936	373	127,560	131,221	8,745	3,018	69.5	159,282	56,894	53	12	27	29.3
1935	373	116,741	122,459	8,567	2,934	69.7	151,195	53,477	50	11	35	36.5
Boston & Maine....1936	1,964	259,889	291,357	27,003	9,473	72.4	504,949	195,830	124	..	167	57.4
1935	1,971	243,932	269,341	24,895	8,605	74.1	441,363	174,601	110	4	168	59.6
N. Y., New Hav. & Hartf..1936	2,016	314,293	386,472	19,234	11,109	70.9	576,433	225,305	169	19	100	34.2
1935	2,049	303,439	370,435	18,520	10,546	69.1	556,522	216,354	173	10	117	39.0
Great Lakes Region:												
Delaware & Hudson....1936	831	211,629	283,675	30,685	7,693	70.4	462,236	228,411	104	121	38	14.4
1935	835	195,890	263,774	28,989	6,976	68.7	416,068	202,272	102	143	30	10.9
Del., Lack & Western....1936	983	338,526	375,845	48,376	11,509	71.9	647,555	265,153	140	1	101	41.7
1935	992	320,240	353,670	46,168	10,727	68.4	606,244	239,601	113	40	89	36.8
Erie (incl. Chi. & Erie)...1936	2,298	696,672	736,783	41,567	30,104	67.6	1,859,883	706,418	224	36	214	45.1
1935	2,307	657,894	692,321	44,098	28,087	66.4	1,695,971	627,833	198	61	213	45.1
Grand Trunk Western....1936	1,027	228,595	229,795	1,869	5,715	66.7	336,570	127,822	81	2	55	39.9
1935	1,007	197,314	199,942	2,486	5,505	64.4	330,453	123,275	72	..	68	48.6
Lehigh Valley....1936	1,312	333,885	353,417	41,182	12,154	68.6	726,839	313,860	119	18	147	51.8
1935	1,321	329,798	348,202	34,736	10,882	67.7	658,372	273,712	130	7	155	53.1
New York Central....1936	10,793	2,581,658	2,726,883	161,018	87,650	62.2	5,631,457	2,420,599	864	123	525	34.7
1935	10,919	2,269,798	2,387,791	137,769	78,065	62.3	4,916,161	2,074,616	713	138	668	44.0
N. Y., Chicago & St. Louis.1936	1,672	470,909	475,844	6,693	16,501	65.5	980,995	387,291	155	10	27	14.1
1935	1,661	405,890	408,986	6,290	14,267	66.5	832,610	315,465	127	44	20	10.5
Pere Marquette 1936	2,080	328,992	341,613	5,965	8,306	63.9	525,481	215,078	113	7	32	21.1
1935	2,091	330,939	347,186	5,160	8,448	62.5	542,162	216,680	108	5	44	28.0
Pittsburgh & Lake Erie....1936	234	89,153	91,446	.....	3,538	61.0	302,945	173,168	33	11	24	35.3
1935	234	62,434	64,262	.....	2,592	60.2	220,078	124,933	16	15	43	58.1
Wabash 1936	2,435	555,831	567,521	11,496	17,036	68.0	982,316	358,771	134	34	140	45.5
1935	2,435	510,009	518,834	11,458	16,209	66.8	925,102	329,016	121	33	166	51.9
Central Eastern Region:												
Baltimore & Ohio....1936	6,366	1,500,612	1,849,731	193,224	47,817	66.3	3,187,440	1,504,052	665	18	617	47.5
1935	6,319	1,285,667	1,591,873	167,936	40,014	64.0	2,672,026	1,212,901	579	94	631	48.4
Central of New Jersey....1936	681	148,204	167,108	30,317	4,814	62.3	321,980	151,255	57	15	75	51.2
1935	684	135,570	154,365	28,499	4,664	62.7	313,814	151,956	57	11	88	56.4
Chicago & Eastern Illinois.1936	931	159,210	159,430	2,479	4,260	71.3	256,515	116,300	52	..	56	51.9
1935	939	155,668	155,902	2,485	3,733	65.1	236,460	102,364	42	7	60	55.0
Elgin, Joliet & Eastern....1936	434	97,224	98,298	1,699	2,536	61.9	191,321	96,885	58	..	28	32.6
1935	434	81,926	83,027	1,141	2,075	62.3	156,518	78,011	51	4	32	36.8
Long Island 1936	393	32,624	33,029	15,123	272	50.0	21,121	7,756	34	1	15	30.0
1935	393	24,350	25,546	12,214	224	52.7	17,219	6,841	28	3	19	38.0
Pennsylvania System 1936	9,801	3,023,788	3,416,210	404,434	108,122	64.4	7,247,565	3,355,828	1,416	167	763	32.5
1935	10,009	2,434,444	2,740,450	290,020	89,909	65.3	5,803,541	2,604,339	1,132	230	1,065	43.9
Reading 1936	1,449	401,503	433,852	47,743	11,539	64.9	806,783	394,320	194	55	94	27.4
1935	1,452	340,686	371,091	42,428	10,164	62.9	717,614	344,555	172	93	101	27.6
Pocahontas Region:												
Chesapeake & Ohio....1936	3,050	886,110	945,146	42,471	41,460	56.5	3,500,718	1,921,172	412	45	79	14.7
1935	3,050	759,878	797,000	31,238	32,621	56.1	2,734,938	1,473,229	276	184	90	16.4
Norfolk & Western....1936	2,160	695,638	742,668	37,540	30,051	60.3	2,570,588	1,436,052	266	50	51	13.9
1935	2,145	559,376	584,763	26,663	22,452	60.3	1,785,031	923,986	223	100	57	15.0
Southern Region:												
Atlantic Coast Line....1936	5,081	509,170	510,215	7,094	10,809	67.9	565,585	211,961	201	61	125	32.3
1935	5,146	427,529	428,058	6,056	9,085	65.8	468,072	166,794	241	58	128	30.0
Central of Georgia....1936	1,886	243,914	245,494	3,182	5,577	74.7	291,877	114,858	92	..	32	25.8
1935	1,886	215,471	216,810	3,416	5,199	73.4	264,387	102,639	99	..	42	29.8
Illinois Central (incl. Y. 1936	6,562	1,554,531	1,566,103	29,072	38,583	64.3	2,448,072	1,019,974	662	9	212	24.0
& M. V.)....1935	6,587	1,357,334	1,365,352	25,274	33,596	64.3	2,129,593	897,445	588	51	222	25.8
Louisville & Nashville....1936	4,979	1,081,107	1,182,230	30,067	26,626	60.7	1,871,753	901,204	362	11	200	34.9
1935	5,045	927,862	1,010,719	25,784	22,031	60.7	1,527,446	739,136	295	23	266	45.5
Seaboard Air Line....1936	4,295	421,815	438,436	4,062	11,047	70.3	606,449	240,128	203	15	117	34.9
1935	4,295	375,466	381,554	3,507	8,975	70.2	488,372	187,687	203	22	131	36.8
Southern 1936	6,596	1,246,826	1,266,917	21,186	29,715	71.4	1,600,731	653,945	500	36	264	33.0
1935	6,599	1,073,248	1,088,032	18,622	25,670	70.6	1,353,054	529,941	396	59	351	43.5
Northwestern Region:												
Chicago & North Western..1936	8,355	994,015	1,045,878	30,691	28,179	62.7	1,768,754	661,225	375	127	213	29.8
1935	8,428	967,739	1,020,071	28,494	25,759	61.7	1,627,058	566,698	436	121	207	27.1
Chicago Great Western....1936	1,458	281,106	281,863	16,289	8,243	61.4	508,860	182,422	66	1	19	22.1
1935	1,458	229,863	231,825	11,089	7,369	63.9	447,833	169,558	59	4	34	35.1
Chi., Milw., St. P. & Pac..1936	11,120	1,447,143	1,554,766	66,507	39,470	61.6	2,508,797	1,006,397	502	55	122	18.0
1935	11,119	1,353,044	1,437,181	61,698	37,447	60.3	2,401,481	978,901	424	101	133	20.2
Chi., St. P., Minneap. & Om.1936	1,637	234,824	251,806	11,095	5,110	63.9	325,178	133,065	87	39	22	14.9
1935	1,641	218,782	229,389	9,134	4,924	64.5	306,213	133,197	72	37	32	22.7
Great Northern 1936	8,059	985,904	990,599	37,188	35,234	56.9	2,495,923	1,071,589	397	25	161	27.6
1935	8,031	986,988	996,226	34,181	35,586	57.7	2,512,132	1,105,792	410	33	157	26.2
Minneap., St. P. & S. St. M.1936	4,273	376,987	385,418	4,303	8,844	68.0	532,250	224,929	122	..	33	21.3
1935	4,273	380,322	385,855	4,038	9,069	67.5	536,411	244,462	146	..	20	12.0
Northern Pacific 1936	6,429	825,435	913,362	55,747	25,840	63.9	1,593,288	633,238	358	4	81	18.3
1935	6,421	756,700	836,994	65,047	24,204	63.0	1,528,686	635,500	362	2	90	19.8
Central Western Region:												
Alton 1936	912	204,501	216,956	1,515	4,906	67.7	298,091	117,546	75	3	20	20.4
1935	921	189,535	199,892	1,878	4,373	64.1	272,009	100,808	66	5	28	28.3
Atch., Top. & S. Fe (incl. 1936	13,228	1,862,571	2,024,869	98,863	53,618	63.0	3,399,955	1,148,349	563	83	328	33.7
G.C. & S.F. & P. & S.F.).1935	13,260	1,631,942	1,751,628	73,812	45,920	63.4	2,837,899	962,064	514	110	366	37.0
Chicago, Burl. & Quincy...1936	8,935	1,415,872	1,486,735	60,343	37,815	61.6	2,294,128	935,941	446	..	93	17.3
1935	8,971	1,279,620	1,338,416	50,011	34,352	61.0	2,077,673	869,145	450	3	102	18.4
Chi., Rock I. & Pac. (incl. 1936	8,179	1,137,427	1,157,026	6,253	25,640	65.7	1,549,704	618,532	394	35	260	37.7
Chi., Rock I. & Gulf)...1935	8,272	995,115	1,013,034	6,924	22,506	65.5	1,338,455	530,010	353	39	333	45.9
Denv. & Rio Gr. Western..1936	2,584	406,576	452,544	49,641	10,102	63.9	649,691	262,728	196	..	10	4.9
1935	2,584	333,656	363,909	37,212	8,492	65.7	510,828	193,849	167	6	43	19.9
Southern Pac.—Pac. Lines.1936	8,614	1,500,818	1,641,192	195,401	49,179	65.5	3,065,054	1,126,331	569	59	163	20.6
1935	8,599	1,203,650	1,304,341	149,571	38,629	63.2	2,441,129	854,319	428	112	247	31.4
Union Pacific 1936	9,918	2,134,392	2,210,846	122,515	66,768	62.7	4,219,874	1,485,409	703	28	156	17.6
1935	9,824	2,019,394	2,108,033	131,097	62,002	60.9	3,865,861	1,344,557	619	54	215	24.2
Southwestern Region:												
Mo.-Kansas.-Texas Lines ..1936	3,282	391,931	396,762	6,433	10,804	66.2	642,265	245,558	111	21	74	35.9
1935	3,282	355,560	359,114	5,301	10,067	65.1	600,085	228,645	88	32	76	38.8
Missouri Pacific 1936	7,188	1,299,529	1,335,238	31,047	36,163	61.4	2,301,256	889,513	362	43	125	23.6
1935	7,202	1,153,396	1,189,989	24,694	30,935	62.8	1,936,020	754,815	283	107	152	28.0
St. Louis-San Francisco....1936	4,888	761,078	766,277	9,912	16,605	62.8	1,028,015	410,090	276	67	80	18.9
1935	4,888	656,245	663,312	8,924	14,764	63.7	896,465	362,694	256	110	65	15.1
St. Louis Southw. Lines...1936	1,733	225,456	227,094	2,762	6,406	72.6	354,384	145,732	93	17	5	4.3
1935	1,767	198,916	207,154	2,731	5,004	73.5	270,544	109,724	95	14	8	6.8
Texas & New Orleans....1936	4,416	551,835	552,064	7,894	13,428	68.5	812,277	329,880	204	43	48	16.3
1935	4,417	478,467	481,916	8,708	10,668	66.5	638,821	239,158	192	56	57	18.7
Texas & Pacific....1936	1,945	268,559	268,691	1,774	8,606	67.3	503,263	193,782	61	57	95	44.6
1935	1,945	222,327	222,327	1,141	6,993	67.4	405,471	150,131	73	68	80	36.2

Note: Effective with carrier reports for the month of January, 1936, the rules relative to operating statistics of large steam railways were revised with the following effect on this statement: Miles of road operated, number of locomotives on line, and number of freight cars on line were changed from averages for the month to actual figures as of the close of the month. Freight train and locomotive-miles, which formerly applied only to freight trains and the *freight proportion of mixed trains*, based on car-miles, were changed to apply to freight trains and all mixed trains handling more freight-train cars than passenger-train cars. Carriers were not required to rework 1935 figures according to the revised rules, but they have in some cases supplied considerable comparable data. In other cases, the figures shown in this statement for last year were restated by the carriers from last year's reports, or inserted from such reports by the Bureau of Statistics.

1936, Compared with September, 1935, for Roads with Annual Operating Revenues Above $25,000,000

Region, road, and year	Number of freight cars on line: Home	Foreign	Total	Per cent unserviceable	Gross ton-miles per train-hour, excluding locomotives and tenders	Gross ton-miles per train-mile, excluding locomotives and tenders	Net ton-miles per train-mile	Net ton-miles per loaded car-mile	Net ton-miles per car-day	Car-miles per car-day	Net ton-miles per mile of road per day	Pounds of coal per 1,000 gross ton-miles, including locomotives and tenders	Locomotive-miles per locomotive-day
New England Region:													
Boston & Albany.....1936	2,311	4,455	6,766	24.4	20,614	1,259	450	18.9	292	22.3	5,086	156	50.7
1935	2,665	4,842	7,507	23.2	21,099	1,306	462	18.2	254	20.0	4,776	151	45.5
Boston & Maine.....1936	7,585	8,411	15,996	15.3	25,997	1,930	756	20.7	416	27.8	3,325	97	36.8
1935	8,407	8,236	16,643	14.4	24,686	1,817	719	20.3	372	24.7	2,953	101	34.4
N. Y., New Hav. & Hartf..1936	10,696	11,865	22,561	14.3	25,679	1,868	730	20.3	337	23.4	3,726	100	46.6
1935	13,525	11,379	24,904	15.3	25,663	1,870	727	20.5	290	20.4	3,519	102	43.2
Great Lakes Region:													
Delaware & Hudson.....1936	7,783	3,654	11,437	4.4	30,547	2,200	1,087	29.7	656	31.3	9,165	101	39.4
1935	9,094	3,251	12,345	5.8	29,715	2,137	1,039	29.0	511	25.6	8,072	105	35.1
Del., Lack & Western.....1936	12,753	6,724	19,477	17.5	31,785	1,938	794	23.0	454	27.4	8,994	125	58.7
1935	15,627	5,574	21,201	12.8	31,826	1,925	761	22.3	374	24.5	8,052	130	55.1
Erie (incl. Chi. & Erie)...1936	16,686	19,732	36,418	2.9	44,336	2,692	1,023	23.5	640	40.3	10,249	92	54.6
1935	20,474	13,763	34,237	6.4	43,667	2,592	960	22.4	617	41.6	9,073	89	51.9
Grand Trunk Western.....1936	5,406	7,051	12,457	15.7	28,772	1,483	563	22.4	345	23.1	4,148	95	56.0
1935	5,669	7,092	12,761	18.0	30,814	1,685	629	22.4	347	24.1	4,082	95	47.9
Lehigh Valley.....1936	10,651	9,485	20,136	5.7	37,641	2,213	955	25.8	506	28.5	7,972	114	45.8
1935	12,318	7,955	20,273	6.6	36,828	2,041	849	25.2	463	27.2	6,908	122	42.4
New York Central.....1936	98,905	68,390	167,295	20.6	35,605	2,204	948	27.6	481	28.0	7,476	98	63.7
1935	121,395	65,794	187,189	19.6	35,422	2,191	925	26.6	369	22.3	6,333	98	55.5
N. Y., Chicago & St. Louis.1936	6,142	7,969	14,111	3.0	37,533	2,086	823	23.5	919	59.7	7,722	86	83.8
1935	7,759	6,473	14,232	5.7	36,382	2,054	778	22.1	701	47.7	6,332	85	72.5
Pere Marquette 1936	8,190	7,092	15,282	4.8	25,557	1,600	655	25.9	476	28.8	3,444	91	77.0
1935	9,364	6,559	15,923	4.6	26,388	1,639	655	25.6	456	28.4	3,456	88	75.0
Pittsburgh & Lake Erie....1936	13,004	12,834	25,838	40.4	48,588	3,407	1,947	48.9	223	7.5	24,686	85	44.2
1935	15,290	12,294	27,584	43.4	49,400	3,532	2,005	48.2	151	5.2	17,821	93	29.3
Wabash 1936	12,187	10,018	22,205	6.1	35,563	1,785	652	21.1	542	37.7	4,912	102	62.5
1935	11,588	9,158	20,746	2.9	35,780	1,839	654	20.3	518	38.1	4,505	104	54.6
Central Eastern Region:													
Baltimore & Ohio.....1936	63,571	29,391	92,962	19.8	27,329	2,157	1,018	31.5	539	25.9	7,875	133	52.4
1935	71,394	22,758	94,152	20.0	27,266	2,105	955	30.3	429	22.1	6,398	137	45.0
Central of New Jersey....1936	10,753	11,197	21,950	30.6	26,572	2,276	1,069	31.4	231	11.8	7,401	142	44.8
1935	12,251	10,666	22,917	28.5	27,997	2,411	1,167	32.6	234	11.4	7,405	134	39.1
Chicago & Eastern Illinois.1936	2,672	3,403	6,075	7.7	28,376	1,617	733	27.3	621	31.9	4,163	114	50.0
1935	3,515	3,071	6,586	11.1	27,223	1,527	661	27.4	512	28.7	3,634	122	48.4
Elgin, Joliet & Eastern....1936	7,768	5,416	13,184	4.9	17,554	2,017	1,022	38.2	246	10.4	7,440	106	38.5
1935	7,620	3,554	11,174	6.5	17,756	1,959	976	37.6	239	10.2	5,991	107	32.2
Long Island 1936	574	3,209	3,783	2.3	5,232	668	245	28.5	68	4.8	658	340	32.1
1935	766	3,533	4,299	2.9	5,558	724	288	30.5	60	3.7	581	312	24.9
Pennsylvania System 1936	188,226	67,050	255,276	18.1	33,908	2,443	1,131	31.0	435	21.8	11,414	112	54.0
1935	233,092	55,812	288,904	16.5	33,202	2,425	1,088	29.0	299	15.8	8,673	114	41.5
Reading 1936	22,683	12,986	35,669	9.7	24,616	2,015	985	34.2	373	16.8	9,071	134	46.3
1935	28,513	8,794	37,307	10.1	26,567	2,112	1,014	33.9	302	14.2	7,912	134	37.5
Pocahontas Region:													
Chesapeake & Ohio.....1936	38,382	15,745	54,127	1.1	54,162	4,003	2,197	46.3	1,206	46.0	20,998	69	61.2
1935	40,024	11,442	51,466	2.1	51,194	3,644	1,963	45.2	982	38.7	16,101	73	50.2
Norfolk & Western.....1936	28,251	6,992	35,243	1.7	53,772	3,726	2,081	47.8	1,373	47.7	22,166	90	70.8
1935	31,084	4,744	35,828	3.1	47,611	3,223	1,668	41.2	838	33.7	14,360	101	53.5
Southern Region:													
Atlantic Coast Line.....1936	17,263	8,593	25,856	28.1	18,484	1,112	417	19.6	276	20.7	1,391	110	44.3
1935	21,769	6,696	28,465	21.9	18,219	1,096	391	18.4	195	16.1	1,080	116	33.7
Central of Georgia.....1936	2,581	4,416	6,997	3.2	21,455	1,199	472	20.6	547	35.6	2,030	113	66.8
1935	4,919	4,163	9,082	19.1	21,207	1,230	477	19.7	377	26.0	1,814	122	52.1
Illinois Central (incl. Y. & M. V.).....1936	32,850	24,932	57,782	23.8	24,976	1,586	661	26.4	593	34.9	5,181	122	59.7
1935	40,546	20,580	61,126	35.8	25,727	1,579	665	26.7	492	28.6	4,542	124	54.0
Louisville & Nashville.....1936	32,480	10,920	43,400	23.5	25,773	1,734	835	33.8	696	33.9	6,033	116	70.2
1935	37,161	9,547	46,708	30.1	25,454	1,651	799	33.5	551	26.3	4,884	121	59.3
Seaboard Air Line.....1936	8,622	7,296	15,918	2.5	23,060	1,459	578	21.7	528	34.5	1,863	114	44.0
1935	9,574	5,398	14,972	3.6	21,061	1,315	505	20.9	439	29.8	1,456	117	36.6
Southern 1936	21,986	20,468	42,454	16.6	21,120	1,295	529	22.0	524	33.4	3,305	147	53.9
1935	24,646	16,443	41,089	15.2	20,950	1,269	497	20.6	434	29.7	2,677	149	45.8
Northwestern Region:													
Chicago & North Western..1936	34,986	24,693	59,679	7.8	26,777	1,784	667	23.5	367	24.9	2,638	110	50.3
1935	37,751	22,558	60,309	10.0	25,007	1,687	587	22.0	304	22.4	2,241	113	45.7
Chicago Great Western....1936	2,037	4,562	6,599	2.9	31,341	1,811	649	22.1	940	69.1	4,171	122	115.6
1935	1,681	3,993	5,674	2.4	35,896	1,950	738	23.0	995	67.6	3,876	119	83.5
Chi., Milw., St. P. & Pac..1936	41,665	23,787	65,452	2.7	27,364	1,743	699	25.5	499	31.7	3,017	118	79.6
1935	47,181	18,986	66,167	2.7	27,813	1,784	727	26.1	493	31.3	2,935	115	75.9
Chi., St. P., Minneap. & Om.1936	3,395	5,936	9,331	9.7	17,692	1,391	569	26.0	452	27.1	2,710	107	59.2
1935	3,294	7,166	10,460	9.9	19,762	1,418	617	27.1	427	24.4	2,705	109	56.0
Great Northern 1936	36,651	16,472	53,123	5.3	38,081	2,547	1,093	30.4	666	38.5	4,432	101	58.5
1935	38,062	18,612	56,638	5.5	36,953	2,568	1,130	31.1	658	36.6	4,590	102	57.2
Minneap., St. P. & S. St. M.1936	12,385	5,521	17,906	5.1	22,175	1,419	600	25.4	416	24.1	1,755	94	85.5
1935	12,868	5,096	17,964	4.0	22,188	1,426	650	27.0	439	24.1	1,907	95	78.8
Northern Pacific 1936	26,152	10,462	36,614	8.8	29,708	1,939	771	24.5	572	36.5	3,283	138	72.6
1935	29,695	8,412	38,107	11.1	30,595	2,029	844	26.3	548	33.2	3,299	136	66.4
Central Western Region:													
Alton 1936	2,349	6,441	8,790	23.5	33,664	1,467	578	24.0	439	27.1	4,299	111	72.8
1935	2,406	6,855	9,261	21.3	33,363	1,444	535	23.1	360	24.4	3,648	113	65.9
Atch., Top. & S. Fe (incl. 1936	61,804	13,718	75,522	10.5	33,689	1,831	619	21.4	499	37.0	2,894	114	72.8
G.C. & S.F. & P. & S.F.).1935	68,205	11,684	79,889	12.0	32,085	1,744	591	21.0	392	29.6	2,418	113	61.5
Chicago, Burl. & Quincy...1936	23,967	19,696	43,663	7.1	28,114	1,631	666	24.8	713	46.8	3,492	119	95.6
1935	23,827	15,835	44,662	9.5	28,042	1,632	683	25.3	646	41.8	3,229	115	83.4
Chi., Rock I. & Pac. (incl. 1936	21,961	14,127	36,088	8.8	23,751	1,366	545	24.1	563	35.5	2,521	127	55.8
Chi., Rock I. & Gulf)...1935	26,323	11,937	38,260	13.5	23,030	1,349	534	23.5	447	28.9	2,136	131	46.6
Denv. & Rio Gr. Western..1936	11,308	5,951	17,259	7.3	24,129	1,609	651	26.0	503	30.2	3,389	157	81.3
1935	12,261	4,330	16,591	7.0	23,810	1,539	584	22.8	378	25.2	2,501	160	61.3
Southern Pac.—Pac. Lines.1936	31,676	31,188	62,864	7.5	31,667	2,059	757	22.9	605	40.3	4,359	102	78.2
1935	34,452	26,853	61,305	8.6	31,494	2,045	716	22.1	465	33.3	3,312	103	61.6
Union Pacific 1936	37,718	24,929	62,647	10.5	39,546	1,988	700	22.2	788	56.4	4,992	113	88.1
1935	41,271	23,412	64,683	15.0	38,617	1,929	671	21.7	688	52.1	4,562	115	84.1
Southwestern Region:													
Mo.-Kansas.-Texas Lines ..1936	4,387	6,548	10,935	5.6	28,330	1,643	628	22.7	747	49.6	2,494	83	65.2
1935	5,373	4,974	10,347	3.0	29,907	1,690	644	22.7	736	49.8	2,322	80	62.0
Missouri Pacific 1936	14,961	26,259	41,220	2.6	30,317	1,778	687	24.6	759	50.3	4,125	115	85.8
1935	16,167	20,904	37,071	3.1	29,141	1,687	658	24.4	682	44.5	3,493	120	75.1
St. Louis-San Francisco....1936	14,869	9,554	24,423	6.5	24,575	1,355	541	24.7	560	36.1	2,796	127	61.2
1935	17,391	6,938	24,329	5.2	24,451	1,372	555	24.6	497	31.8	2,473	125	52.0
St. Louis Southw. Lines...1936	2,507	4,029	6,536	2.9	26,148	1,587	652	22.7	790	47.8	2,803	93	65.5
1935	3,020	2,551	5,571	6.2	23,243	1,363	553	21.9	644	39.9	2,070	101	58.8
Texas & New Orleans.....1936	6,773	12,646	19,419	6.6	25,526	1,480	601	24.6	569	33.8	2,490	87	62.8
1935	7,097	11,042	18,139	8.8	23,475	1,343	503	22.4	444	29.7	1,805	91	54.0
Texas & Pacific.....1936	2,527	5,616	8,143	3.2	29,410	1,880	724	22.5	811	53.6	3,321	84	42.1
1935	2,496	5,080	7,576	4.2	28,637	1,826	676	21.5	689	47.6	2,572	81	33.7

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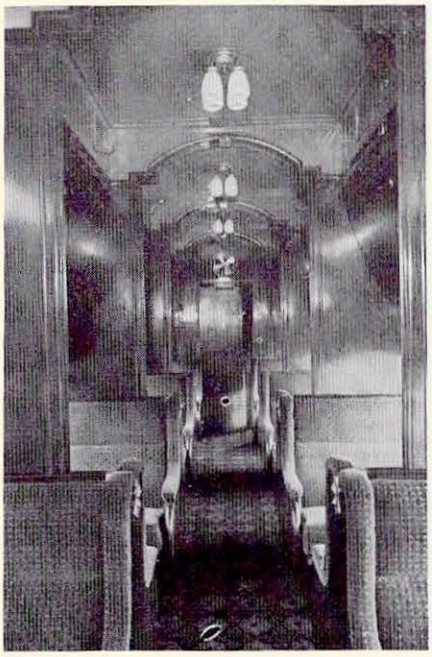

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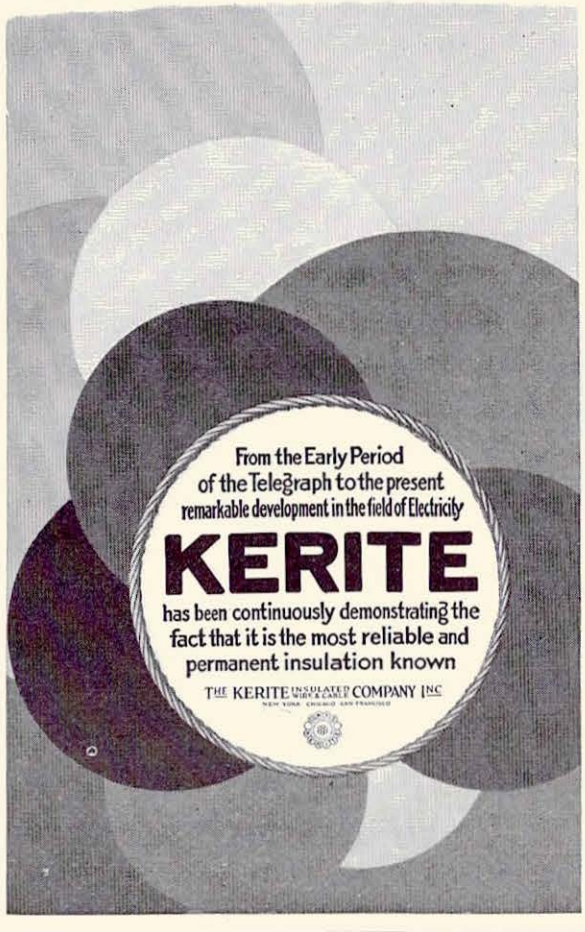
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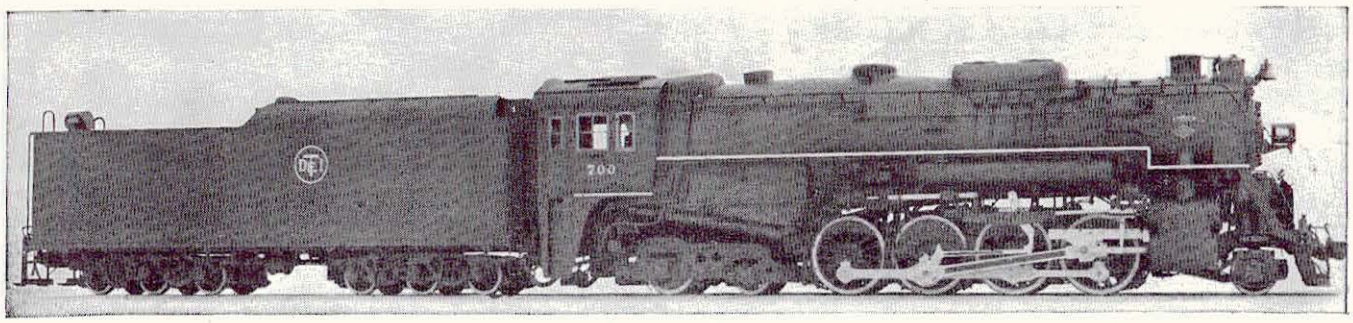

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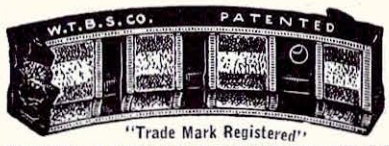

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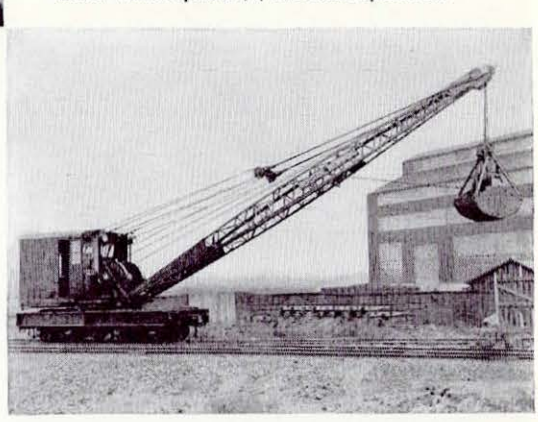

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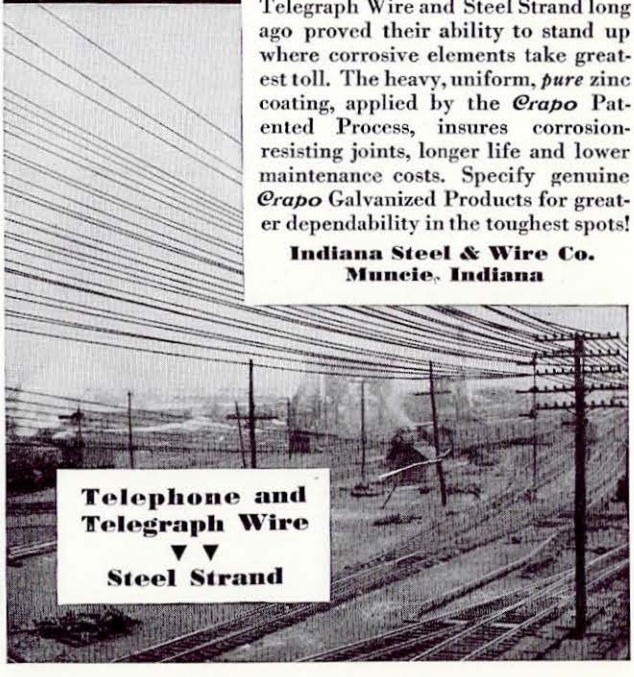

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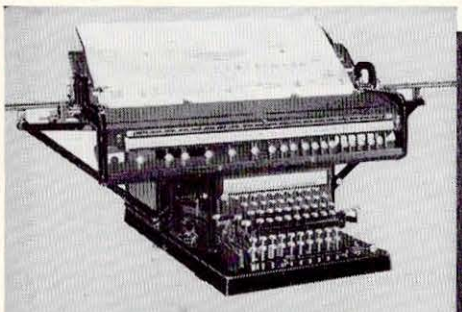

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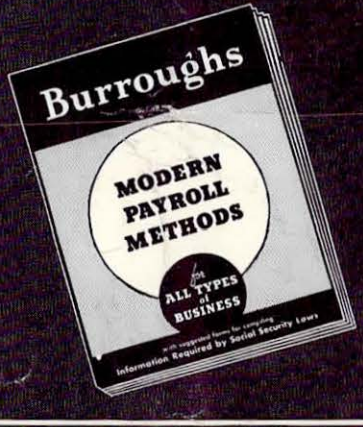

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